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ABSTRACT

This annual listing of research in mathematics education contains annotated citations of research papers and monographs dated 1995 through March 1996 and abstracted for the ERIC database, as well as journal articles focusing on the interpretation and implications of mathematics education research. Also included is an index of dissertations by institution and a list of journals searched. (JRH)

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Research in Mathematics Education 1995

Edited by Douglas T. Owens

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We acknowledge the financial support of NCTM for this volume. We express thanks to the ERIC/CSMEE production staff for their assistance. In addition to the authors of the various lists, we would like to acknowledge the contribution of Kelly M. Costner who prepared entries for dissertation abstracts written in French.

Preface

This is the second annual research listing prepared by the ERIC Clearinghouse for Science, Mathematics, and Environmental Education (ERIC/CSMEE) with the financial support of NCTM. The annual listing of research in mathematics education for many years was published as an issue of the Journal for Research in Mathematics Education, a publication of the National Council of Teachers of Mathematics.

This version is very similar to the version of last year's listing the 1994 research. Each entry has been classified with ***Major*** and ***Minor*** codes and all entries are indexed by ***Major*** codes. Research Papers and monographs dated 1995 and abstracted for the ERIC database by the end of March 1996, as well as journal articles focusing on the interpretation and implications of research, have been included. An index of dissertations by institution is provided. A list of journals searched is included.

As much as mathematics educators have valued the research listing in the past, with electronic databases becoming increasingly accessible, it is not clear in what format(s) future listings would be most useful. Though ERIC/CSMEE has the capacity to produce this listing, it is not clear the extent to which a single annotated listing of mathematics education research is still valued by the mathematics education community. We earnestly request feedback from you our reader, either in writing or by e-mail at the addresses listed below. This listing will be available through the ERIC/CSMEE World Wide Web site.

We sincerely hope you find this listing useful. *Again, we solicit your comments and recommendations.* You may contact ERIC/CSMEE by mail, ERIC Clearinghouse for Science, Mathematics and Environmental Education, 1929 Kenny Road, Columbus, OH 43210-1080, or by e-mail to ericse@osu.edu.

Key to Codes

The following topic codes have been used to indicate the ***Major*** and *Minor* emphases of each dissertation, journal article, and paper in this listing. Each entry has been assigned a minimum of one and a maximum of three ***Major*** codes and any number of *Minor* codes. The combined topic index at the end of the volume reflects only ***Major*** codes, with entries listed in 18 clusters of related topics.

The grade **LEVEL** of each study is indicated in parentheses at the end of the list of codes. Please note that studies related to preservice or inservice teacher education are so indicated by the appropriate topic codes (*Prsv, Isrv*). The **LEVEL** designated on teacher education studies refers to the grade level(s) at which the intern or teacher participants teach.

Topic Codes

A/S	Addition, subtraction	*Geom*	Geometry
Ach	Achievement	*Gift*	Gifted (students)
AdvM	Post-calculus mathematics	*Grpg*	Grouping for instruction, cooperative learning
Aff	Affect		
Alg	Algebra, pre-algebra	*IC*	Integrated curriculum
Anx	Anxiety (student's)	*Impl*	Implications of research, interpretations of research
Arth	Arithmetic		
Assm	Assessment, evaluation	*Int*	Integers
Att	Attitudes (student's)	*Isrv*	Inservice teacher education, professional development
Blf	Beliefs (student's)		
CAI	Computer-assisted instruction	*Knw*	Knowledge (student's)
Calc	Calculators (general)	*Lang*	Language, psycholinguistics
Cals	Calculus, precalculus	*LD*	Learning disabled
CC	Cross-cultural	*Lrng*	Learning, learning theories, cognitive development
CIIn	Classroom interaction		
Comm	Communication	*Lrnr*	Learners (characteristics of)
Comp	Computers (general)	*M/D*	Multiplication, division
Curr	Curriculum, programs	*Manp*	Manipulatives
D/R	Diagnosis, remedial mathematics	*Matl*	Materials (texts, other resources)
Decm	Decimals	*Meas*	Measurement
DscM	Discrete mathematics	*Mtcg*	Metacognition, reflection
Eqv	Equivalence, proportions	*NSns*	Number sense
Est	Estimation	*Oral*	Oral communication, classroom discourse
Ethn	Ethnic, racial		
Frac	Fractions, rational numbers	*Pat*	Patterns, relationships, math connections
GCal	Graphing calculators		
Gend	Gender differences	*Phil*	Philosophy, epistemology

Plan	Planning, decision making	*TAnx*	Anxiety (teacher's)
PlcV	Place value, numeration	*TAtt*	Attitudes (teacher's)
Prf	Proof, justification	*TBlf*	Beliefs (teacher's)
Prob	Probability	*Tchg*	Teaching (role, style, methods)
PS	Problem solving, reasoning		
Prsv	Preservice teacher education	*Tchr*	Teachers (characteristics of)
RaPc	Ratio, proportion, percent	*Tech*	Technology (general)
Rep	Representations, modelling	*TKnw*	Content knowledge (teacher's), pedagogical knowledge
Revw	Reviews of research		
Rsch	Research issues, methods		
Soc	Social factors, parents, context	*Vis*	Spacial visualization
		Whol	Whole numbers
Stat	Statistics	*Writ*	Writing, journals
Styl	Learning style, cognitive style		

Level Codes

EC	Early childhood, K-4	Se	Secondary, 5-12
MS	Middle grades, 5-8	K-12	All school levels
HS	High school, 9-12	All	All levels
El	Elementary, K-8	TE	Teacher education, teachers

Dissertation Research Reported in 1995

Michael L. Bumbaugh, *The Ohio State University*

Douglas T. Owens, *The Ohio State University*

This section lists 338 dissertations in mathematics education research that were abstracted in *Dissertation Abstracts International* during 1995. Each entry is coded (see Key to Codes) with 1-3 ***Major*** and any number of *minor* topic codes, as well as the grade ***LEVEL*** (in parentheses). Studies related to preservice or inservice teacher education are indicated by the appropriate topic codes (*Prsv, Isrv*). The ***LEVEL*** designated for teacher education or teacher studies first indicates the grade level(s) at which the intern or teacher participants teach, followed by the level "TE" for "teacher education" or "teacher." All entries are indexed by ***Major*** codes at the end of this volume. An index of dissertations by institution is included at the end of this section.

Abrahamson, Christine A. (1994). Reading Disabilities and the Third R:The Relationship Between Reading and Arithmetic Performance in Reading Disabled Children (American International College). DAI-A 55/09, p. 2767, Mar 1995. [AAC 9504121]

With exception of math conceptual skills, normal readers were significantly more competent in math than disabled readers. Extensive heterogeneity within disabled readers, with several children demonstrating at least average competence in math (n=35).

Ach, LD, Lang, Arth **(EL)**

Adams, Thomasenia Lott. (1993). The Effects of Graphing Calculators and a Model for Conceptual Change on Community College Algebra Students' Concept of Function (University of Florida). DAI-A 55/07, p. 1859, Jan 1995. [AAC 9431900]

Students means for calculators only significantly higher than calculators with conceptual change assignment. Means for assignment only significantly higher than calculators with assignment or control. Assignment groups had lower concept means. **Alg, GCal, Lrng**, Ach, Curr **(PS)**

Adamson, Pamela Garner. (1994). The Influence of Leadership Structure and Leader Perceptions on Mathematics Innovativeness in Selected Schools and Districts (University of Georgia). DAI-A 55/09, p. 2649, Mar 1995. [AAC 9504362]

Configuration of district level curriculum leadership the major factor in mathematics innovativeness in schools and school districts. Size, location and wealth important in district innovativeness; size important in school mathematics innovativeness. **Curr, Soc (K-12)**

Alkhateeb, Haitham Mohammad. (1995). The Effect of Using Graphics Calculators on Student's Attitudes Towards Mathematics and Students' Achievement in Introductory Calculus (Ohio University). DAI-A 56/06, p. 2155, Dec 1995. [AAC 9533206]

One class was given access to graphics calculators and encouraged to use them, the other class was not given access to graphics calculators. There was no significant change in attitude in either class. There was no significant difference between the classes in achievement.

Att, Ach, GCal, Cals **(PS)**

Allen, Gregory Howard. (1995). A Comparison of the Effectiveness of the Harvard Calculus Series with the Traditionally Taught Calculus Series (San Jose State University). MAI 33/06, p. 1646, Dec 1995. [AAC 1374560]

Students from Harvard group have better attitude about mathematics as well as better understanding of calculus. Limits was only area in which traditional group performed better, although neither group did very well on this topic (n=12). **Cals**, **Att**, **Ach**, Curr **(PS)**

Anku, Sitsofe Enyonam. (1994). Using Small Group Discussions to Gather Evidence of Mathematical Power (The University of British Columbia). DAI-A 56/04, p. 1278, Oct 1995. [AAC NN95305]

Students (n=4) demonstrated math power to an extent. Combining students' written scripts with students' talk provides better insight. Students working in groups can shift viewpoints consensually or conceptually to align their viewpoints with majority viewpoints.

Grpg, **Lrng**, **Comm**, Oral, Wrt **(HS)**

Aspinwall, Leslie Nolan. (1994). The Role of Graphic Representation and Students' Images in Understanding the Derivative in Calculus: Critical Case Studies (The Florida State University). DAI-A 55/07, p. 1859, Jan 1995. [AAC 9432611]

Graphic instructional representations for functions and their derivatives, and undergraduate students' (n=2) concomitant images, have the potential for producing a richer understanding than that achieved by analytic study alone. **Cals**, **Lrng**, Geom, Alg **(PS)**

Atkins, Charles Dwight, Jr. (1994). A Study to Produce Guidelines for Evaluating Calculus Reform Projects (North Carolina State University). DAI-A 56/04, p. 1278, Oct 1995. [AAC 9525515]

Evaluation should focus on aspects of a project that relate to goals of calculus reform incorporated into design. Guidelines and strategies are given for each evaluation phase. Descriptions are given of how they might be applied to evaluation of an exemplary class.

Cals, **Curr**, **Assm**, Geom **(PS)**

Austin, Judith A. (1994). Distance Learning of College Algebra Via Visit (Central Missouri State University). MAI 33/06, P. 1646, Dec 1995. [AAC 1362038]

No significant differences between Visual Integrated Technology (VISIT) distance learning and traditional means. Satisfaction issue complicated by inadequate data.

Tech, **Alg**, **Ach**, Att **(PS)**

Bailey, Mark Dixon. (1994). Parental Beliefs and Children's Achievement: A Model of Social Cognitive Mediation (The University of Wisconsin - Madison). DAI-A 55/11, p. 3449, May 1995. [AAC 9508847]

Mothers' beliefs about their fifth-graders' (n=81) math competence and performance directly and indirectly related to children's performance. Mothers of girls reported lower beliefs than mothers of boys, and girls reported a lower math self-concept than boys.

Soc, **Ach**, **Aff**, Gend **(MS)**

Baker, Bernadette Marie. (1994). Analysis of the Effect of In-Class Writing on the Learning of Function Concepts in College Algebra (Iowa State University). DAI-A 55/09, p. 2753, Mar 1995. [AAC 9503527]

(n=209) Low achievement writing students had significantly more positive attitudes toward math than low achievement nonwriting students. Writing students not taking math class for 1.5 years or more had significantly better achievement scores than control counterparts.

Att, Wrt, Ach, Alg (PS)

Baker, Susan Carol. (1994). The Development of Children's Fraction Thinking in a First-Grade Classroom (The University of Wisconsin - Madison). DAI-A 55/07, p. 1805, Jan 1995. [AAC 9420067]

Majority began with informal knowledge of "one half" in equal sharing; half had informal knowledge of inverse relation between people sharing and size of a share. Children created and used notational systems for fractions without depending on manipulatives.

Frac, Manp, Lrng, Tchg (EC)

Barnes, David E. (1994). Secondary Mathematics Teachers Interactions with Technology (University of Georgia). DAI-A 55/10, p. 3123, Apr 1995. [AAC 9507195]

Teacher's (n=3) definitions of technology influenced by view of role as math teacher and beliefs about nature of mathematics and mathematics education. Technology did not seem to function as catalyst; definition of technology was modified to fit existing beliefs.

Tech, TBlf (SE & TE)

Bates, Juanita Lavall. (1994). The Generalized Distributive Law as Tacit Knowledge in Algebra (The Louisiana State University and Agricultural and Mechanical College). DAI-A 55/11, p. 3395, May 1995. [AAC 9508549]

Investigated (n=40) relative efficacy of theories to explain errors of type: $(a \pm b)c = ac \pm bc$ and $c\sqrt{(a \pm b)} = c\sqrt{(a)} \pm c\sqrt{(b)}$ by novices. Results do not support one theory over another in reducing errors.

Alg, D/R (PS)

Beaton, Kim Elizabeth. (1994). Cognitive Processes of Math Anxious Preservice Elementary Teachers (Acadia University). MAI 33/04, p. 1045, Aug 1995. [AAC MM94157]

Interview data (n=5) related to Beck's cognitive theory to recommend intervention which may alleviate math anxiety; intervention should also include behavioral treatment.

Anx, Lrng, D/R (EL & TE)

Becker, Sandra Louise Marshman. (1994). An Investigation of Selected Factors Related to the Integration of Technology and Alternative Assessment in Mathematics Education (Lehigh University). DAI-A 55/07, p. 1920, Jan 1995. [AAC 9430948]

Perceptions of state department of education math specialists and commercial publishers (n=133) surveyed. Staff development funding for alternative assessment and technology receive high priority. Performance assessments used in 27 states; portfolios in 12.

Assm, Tech, Curr, Calc, Patt (ALL)

Belanus, Margaret R. Muir. (1994). Music and Learning: A Natural Connection (Charleston Southern University). MAI 33/05, p. 1382, Oct 1995. [AAC 1361118]

Teachers indicating little use of music were given sampling of materials suitable for grade for trial period. Teachers felt adding music was effective teaching strategy.

Curr, Tchg, Patt (EL)

Benes-Lafferty, Karen Mae. (1995). An Analysis of Using Musical Activities in a Second-Grade Mathematics Class (Indiana University of Pennsylvania). DAI-A 56/05, p. 1656, Nov 1995. [AAC 9531625]

The experimental group, using musical activities, scored significantly higher in achievement on geometry, measurement and concepts of money. No significant differences were detected in attitude between experimental and control students (n=44).

Curr, Ach, Att, Manp, PlcV Geom **(EC)**

Berger, Aliza Esther. (1995). Solving Mathematics Word Problems: Problem Features Affect Strategy Choice (Columbia University). DAI-A 56/06, p. 2155, Dec 1995. [AAC 9533511]

The strongest effect was found for the number of different types of quantities in the problem. As the number of different types of quantities increased from one to two, a greater proportion of students used 'plug-in.' Results applied to all levels of ability.

Alg, PS, Lrng (Not given)

Berte, Zakaria. (1992). L'apprentissage De Contenus Logico-Mathematiques Operatoires Formels Chez Des Eleves Du Secondaire De Cote D'Ivoire (Universite De Montreal). DAI-A 55/08, p. 2310, Feb 1995 Language:FRENCH. [AAC NN89079] [Title in English: The Acquisition of Formal Operational Logicomathematical Content in Secondary Students of Ivory Coast]

Compares effectiveness of two learning processes: master-experimenter and active learning with added socio-cognitive conflict. Both are effective on specific content used, but results are not generalizable. **Lrng, Tchg,** Ethn **(SE)**

Biggerstaff, Margaret Ann. (1995). Can Mary Do Mathematics Problem Solving? An Investigation of the Relationship Between Cognitive Processing Controls and Mathematics Problem Solving (Harvard University). DAI-A 56/06, p. 2156, Dec 1995. [AAC 9534590]

Results showed that analytical and reflective cognitive style dimensions were predictors of success, along with the interaction of the reflective and narrow cognitive control measures.

PS, Styl, Mtcg, D/R, Blf **(MS)**

Bisse, Wulf Hinrich. (1994). Mathematics Anxiety: A Multi-Method Study of Causes and Effects with Community College Students (Northern Arizona University). DAI-A 55/10, p. 3124, Apr 1995. [AAC 9505456]

A profile was developed of math-anxious students (n=14), in terms of what worries and concerns about math tests are on their minds. **Anx, D/R (PS)**

Blair, Judith Dee. (1994). Development of a General Industrial Mathematics Curriculum for Arkansas Industry (University of Arkansas). DAI-A 55/12, p. 3772, Jun 1995. [AAC 9513203]

Three sizes of Arkansas manufacturing companies (n=211) were used in study: 50-99 employees, 100-199 employees, and 200-299 employees. A general industrial math curriculum was developed based upon response of industrial manufacturing employers. **Curr, Soc (PS)**

Blood, Talmon Clifton, Jr. (1994). A Comparative Study Involving Two Approaches to Documenting Computer Software for Mathematics Teaching Programs (The University of North Carolina at Greensboro). DAI-A 55/11, p. 3437, May 1995. [AAC 9502669]

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Compared completing tasks on Mathematics Toolkit using traditionally textual and primarily pictorial directions. Data from textual approach more favorable in all areas except student's (n=50) judgment between this documentation and past documentation.

Comp, Wrt, Lang, Blf (PS)

Bohn, Michael James. (1994). A Comparison of Achievement Between Students Taking a Developmental Mathematics Course Using Computer-Assisted Instruction and Students Taking the Course in the Traditional Classroom Setting (University of Houston). MAI 33/03, p. 711, Jun 1995. [AAC 1359152]

No significant difference between the mean scores on the final examination of the two groups (n=32). **D/R, Ach, CAI (PS)**

Boulet, Genevieve. (1993). The Construction of the Unit Fraction Concept (Ecole Polytechnique, Montreal). DAI-A 56/04, p. 1279, Oct 1995. [AAC NN95779]

Fourth graders (n=9) experiencing specially designed teaching sequence exhibited understanding of unit fraction categorized by intuition, logico-physical procedures and abstraction, logico-mathematical procedures and abstraction, and formalization. **Frac, Lrng, Tchg (EC)**

Brahier, Daniel Joseph. (1995). Eighth Graders in First-Year Algebra from Selected Catholic Schools In Northwest Ohio: Influences, Aspirations, and Dispositions Toward Mathematics (The University of Toledo). DAI-A 56/05, p. 1696, Nov 1995. [AAC 9532823]

Reasons for enrolling: acceleration of course-taking, preparation for HS, and need for challenge. Enrollment decisions heavily influenced by parents; females more influenced by peers. Males had higher self-efficacy. Some teaching methods evoked positive dispositions.

Aff, Alg, Blf, Gend, Clln, Soc **(MS)**

Brancov, Teodor. (1994). Cooperative Learning in Mathematics with Middle School Indian Students:A Focus on Achievement and On-Task Behavior (University of South Dakota). DAI-A 55/11, p. 3396, May 1995. [AAC 9506443]

Significant difference favoring cooperative learning group in problem-solving achievement, attitude toward math, and classroom climate among Native Americans. No significant differences were identified in relation to time on-task. **Grpg, Ethn, Ach**, PS, Att **(MS)**

Brehmer-Evans, Kathleen Alyce. (1994). The Effects of the Integrated Learning System on Reading and Mathematics Achievement of Magnet Program Students in the School District of the City of River Rouge (Wayne State University). DAI-A 56/02, p. 519, Aug 1995. [AAC 9519871]

Control was traditional second/third graders (n=78). Experimental group was second/third graders (n=62) in magnet school receiving supplemental ILS. Experimental group significantly higher in math achievement; gender and race not significant.

Comp, Ach, IC, Gend, Ethn **(EC)**

Browning, Teresa Lynn Hobaugh. (1994). The Effects of Cross-Age Tutoring on the Mathematics Anxiety of Fifth Grade Tutors (Central Michigan University). MAI 33/02, p. 306, Apr 1995. [AAC 1358426]

Fifth graders (n=46) in experimental group tutored second graders in basic addition and subtraction facts for 8 weeks. No significant difference in math anxiety between experimental and control groups; no significant change in math anxiety in either group. **Anx**, A/S **(MS)**

Brownridge, Douglas Austin. (1994). Gender and Mathematics Anxiety: An Exploration of Differences Among University Students (The University of Manitoba). MAI 33/03, P. 786, Jun 1995. [AAC MM92315]

Female math anxiety involves evaluation (anticipation and writing of math tests); low enjoyment of math accounts for this anxiety. Male math anxiety involves taking courses or anticipation of being in math course; value of math accounts for this anxiety. (n=189).

Gend, Anx, Att (PS)

Byron, Marta Kimlan. (1995). Confronting the Verbal/Visual Issue: The Mathematical Problem-Solving Processes of a Small Group of Female Junior Secondary Students (The Ohio State University). DAI-A 56/04, p. 1279, Oct 1995. [AAC 9526003]

Students' (from Trinidad and Tobago) (n>4) problem-solving success was affected by presence of cognitive mechanisms, problem type, mode of presentation, language competence, dispositions toward interaction, and beliefs in adequacy as problem solvers.

PS, Styl, Vis, Lang, Ethn, Blf **(HS)**

Cabral-Pini, Audrey Marian. (1994). Cooperative Learning: Its Effect on Math Education (University of Massachusetts). DAI-A 55/12, p. 3772, Jun 1995. [AAC 9510450]

Algebra II students (n=48) grouped into teams of 4 (mixed ability). Results show treatment group demonstrated stable gains in math appreciation and achievement, improved interracial relationships, some overcoming of math anxiety and improved discipline.

Grpg, Ethn, Att, Alg, Ach, Anx **(HS)**

Cai, Jinfa. (1994). A Cognitive Analysis of United States and Chinese Students' Mathematical Performance on Tasks Involving Computation, Simple Problem Solving, and Complex Problem Solving (University of Pittsburgh). DAI-A 55/10, p. 3124, Apr 1995. [AAC 9507363]

Chinese students significantly better on computation and simple problem solving, but no differences on complex problem solving. U.S. students significantly higher than computationally equivalent Chinese students on both simple and complex problem solving (n=675).

CC, Ach, Assm, Ethn, PS **(MS)**

Caldwell, Frank Wilson, Jr. (1994). Conceptual and Procedural Achievements: Effect of a Graphics Calculator as a Learning Tool on College Students' Learning of Mathematical Functions and Graphs (Clemson University). DAI-A 56/02, p. 483, Aug 1995. [AAC 9518177]

Control group used scientific calculators without graphics capabilities. Use of TI-81 had significant effect on performance of procedures involving functions and graphs. No significant effect on concepts involving functions and graphs or on attitudes toward math.

GCal, Lrng, Alg, Att, Ach **(PS)**

Chao, Shaw-Jing. (1995). The Effects of Physical Materials on Kindergartners' Learning of Number Concepts (University of California, Los Angeles). DAI-A 56/01, p. 140, Jul 1995. [AAC 9518923]

At the level of numerical operations, structurally organized tile patterns have a facilitating effect on strategy choice and speed up response time for finger-strategy users, whereas diverse objects in various patterns facilitate accuracy (n=157). **Manp, NSns (EC)**

Chen, Tsai-Yun. (1994). A Meta-Analysis of Effectiveness of Computer-Based Instruction in Mathematics (The University of Oklahoma). DAI-A 56/01, p. 125, Jul 1995. [AAC 9516219]

CBI had significant effects on math achievement across student type, duration of experiment, frequency of use, length of per treatment, mode of computer, math content, and focus of math instruction. No significant effects on problem-solving abilities (n=76 studies).

Comp, PS, Ach (ALL)

Chism, Patricia Jane Rich. (1994). 'Applied Mathematics' and Algebra Students' Mathematics Achievement and Attitudes (University of Georgia). DAI-A 55/09, p. 2654, Mar 1995. [AAC 9504376]

Compares 'Applied' (two-year program using laboratory approach relating math skills to real-life problems) students with one-year algebra students (n=224). 'Applied' group had higher gains in achievement. No significant differences between groups in attitude.

Alg, Ach, Att, Tchg **(HS)**

Chung, Kuei-Er. (1994). Young Children's Acquisition of Mathematical Knowledge and Mathematics Education in Kindergarten (Iowa State University). DAI-A 55/09, p. 2708, Mar 1995. [AAC 9503541]

Found math teaching integrated with other learning activities. Teachers (n=30) spent 1/4 of time teaching math and children spent 1/3 of time in math-related learning activities. Students' developmental appropriateness correlated with time spent in learning activities.

Lrng, Tchg, IC (EC)

Cisse, Dogoni. (1994). Modeling Children's Performance on Arithmetic Word Problems With the Linear Logistic Test Model (University of Alberta). DAI-A 56/02, p. 491, Aug 1995. [AAC NN95165]

Three complexity factors contributed to problem difficulty: knowledge of part-whole relationships, consistency of language, and double-role vs. single-role counters (n=40).

A/S, Lrng, PS, Lang **(EC)**

Clarke, Barbara Anne. (1995). Expecting the Unexpected: Critical Incidents in the Mathematics Classroom (The University of Wisconsin - Madison). DAI-A 56/01, p. 125, Jul 1995. [AAC 9510289]

Seventh-grade teachers (n=2) used innovative curriculum materials designed to introduce notions of trigonometry through 'realistic' contexts. Teaching with these kinds of curriculum materials provides particular challenges for teachers.

Rep, Patt, Prsv, Curr, Clln, Tchg **(MS & TE)**

Cobb, Nell B. (1994). The Chicago Algebra Project:A Historical Organizational Case Study (Illinois State University). DAI-A 56/03, p. 854, Sep 1995. [AAC 9521330]

The Algebra Project borrowing from the strategies used in the civil rights movement of the 1960s has successfully mobilized in Chicago. However, careful attention must be paid to problems related to the project's implementation and continuation.

Curr, Alg, Soc, Anx, Ethn **(SE)**

Cobbs, Georgia Ann. (1995). The Evolution and Implementation of an Eighth Grade Integrated Mathematics Science Course (The Ohio State University). DAI-A 56/06, p. 2094, Dec 1995. [AAC 9533952]

Case study (over three-year period) of an integrated math-science, elective course (taught by math and science teachers). Research focused on purposes of the course and procedures taken by school to develop/implement course. **IC, Tchg, Curr**, Comm **(MS)**

Connors, Mary Ann Corbo. (1995). An Analysis of Student Achievement and Attitudes by Gender in Computer-Integrated and Non-Computer-Integrated First Year College Mainstream Calculus Courses (University of Massachusetts). DAI-A 56/03, p. 835, Sep 1995. [AAC 9524690]

Students (n>95) in computer-integrated course performed significantly better on a common final exam; female students may benefit more than any other subgroup. Experimental group tended to use calculators and computers more often for solving problems.

Comp, Ach, Gend, Cals, Att, Blf **(PS)**

Cook, Allen Peter. (1994). On the Creation of a Constructivist Instructional Process for Selected Topics in Algebra (Stanford University). DAI-A 55/10, p. 3124, Apr 1995. [AAC 9508344]

Considers characteristics of a constructivist pedagogy in a math classroom. Defines one methodology for applying principles of constructivist instruction to an elementary algebra class, then analyzes effects of pedagogy on subject matter, students, and teachers. **Lrng, Alg (SE)**

Coombs, Letoynia Janee. (1994). An Analysis of Mathematical Course Taking Patterns and Economic Outcome (Columbia University Teachers College). DAI-A 55/07, p. 1859, Jan 1995. [AAC 9432502]

Data from National Longitudinal Study of High School Class of 1972 and income from 1985. Income increased $770 per high school semester of math and $150 per credit of college math. Above average number of math courses decreased odds of unemployment.

Curr, Soc, Ethn **(HS & PS)**

Cooper, Sandra Bennett. (1994). The Development of Teaching Concepts of Teacher Education Students in a Field-Based and a University-Based Elementary Mathematics Methods Course (Texas A&M University). DAI-A 55/10, p. 3161, Apr 1995. [AAC 9506612]

Classroom teacher has significant influence on teacher education students (n=6) involved in field-based courses. Field-based programs need to be less restrictive in math topics covered. University-based programs need to provide more time for reflection.

Prsv, Tchg, Lrng, Mtcg, Curr **(EL & TE)**

Corbin, Gloria Lynn. (1995). A Comparison of Traditional Basal or Problem-Solving-Investigative Curriculum and Collaborative or Non-Collaborative Teacher Planning on Third-Grade Acquisition of Multiplication (Colorado State University). DAI-A 56/06, p. 2108, Dec 1995. [AAC 9535319]

Findings from data on third grade students (n=168) supported collaborative planning and the problem-solving-investigative curriculum, but indicated a slight overall decline in student attitude. **M/D, PS, Plan**, Att, Ach, Curr **(EC)**

Cordeau, Agnes Marie. (1994). Empowering Young Women to Study Senior High School Mathematics (University of Toronto). DAI-A 55/12, p. 3693, Jun 1995. [AAC NN92831]

Some females (n=38) considered math demanding, inappropriate subject of no great importance to life-plans for marriage, family and not-too-demanding career. Attitude of parents, especially fathers, influenced in course selections. Teachers influenced attitudes.

Gend, Soc, Att (HS)

Correll, Susan Linda. (1995). Curricular Reform and Economic Change: A Study of the Latent Implications of Texts (Columbia University). DAI-A 56/06, p. 2203, Dec 1995. [AAC 9533530]

Found considerable economic and political content in word problems in Houghton-Mifflin series (entrepreneurship, individualism, choice, and profit) and Russian Matematika texts (collectivism, obedience to authority and avoidance of individualism). **Lang, Curr, CC (EL)**

Coston, Yvonne Moore. (1994). The Effects of Graphics Calculator-Enhanced Instruction, and Cooperative Learning on College Algebra Students' Understanding of the Function Concept, Achievement of Algebraic Skills, and Attitudes Toward Mathematics (North Carolina State University). DAI-A 55/08, p. 2310, Feb 1995. [AAC 9501928]

Locus-of-control, control variable and cooperative learning significantly affected students' understanding of functions and related topics. Combined cooperative learning and calculator enhancement significantly affected students' attitudes toward math.

GCal, Alg, Grpg, Att, Ach (PS)

Cousins, Kathy Michele. (1995). A Path Analysis Study of the Factors Affecting Mathematics Achievement for African-American and White Third-Grade Students (University of South Florida). DAI-A 56/04, p. 1279, Oct 1995. [AAC 9528016]

Data from Omnibus Project indicated that African-American, White, and pooled groups showed teacher expectation and SES had significant direct effects on math achievement. Parental involvement had significant indirect effects for all groups. **Ethn, Soc, Ach, Clln (EC)**

Covalt, Wesley Cameron. (1994). Planit!:The Analysis of a Computerized Problem-Solving Tool (Northern Illinois University). DAI-A 55/11, p. 3437, May 1995. [AAC 9510153]

When used with minimal practice, brief training, and multi-step mathematical problems, 'Planet!' software did not significantly improve problem-solving performance.

Comp, PS, Alg (Not given)

Cowen, Lynn Middaugh. (1995). The Impact of the NCTM 'Standards' on the Professional Lives of Elementary Educators:A Portrait of Radical Change (Cleveland State University). DAI-A 56/06, p. 2054, Dec 1995. [AAC 9535858]

Examines the principal, and a first and fourth grade teacher (n=3) in a racially diverse, affluent suburb. Leading radical change requires development of innovative leadership skills, assumption of new roles, and adoption of unorthodox administrative behaviors.

Curr, Tchg, Ethn (EC & TE)

Crates, Gladys Hayes. (1994). Changes in Curricular Design and the Effect on Transfer of Learning in Developmental Mathematics Students (The University of Tennessee). DAI-A 55/07, p. 1859, Jan 1995. [AAC 9432194]

Control group taught traditionally; experimental group taught to use calculator extensively and to encourage integration of math and science. No difference in achievement in basic math. No difference in attitude concerning math and in math anxiety.

IC, D/R, Ach, Att, Anx, Calc **(PS)**

D'adamo, Michele. (1994). Numerical Estimation Skills in Adolescents with Arithmetic Disabilities (Mgh Institute of Health Professions). MAI 33/03, P. 897, Jun 1995. [AAC 1359499]

Subjects and age-matched controls provided population estimates, area estimates and knowledge ratings of 27 states. Subjects re-estimated population of same 27 states following seed information (actual value of 4 of 27 states). Results not given in abstract.

LD, Est, Ach **(HS)**

Davis, Bessie L. (1994). An Ethnographic Study of a Kindergarten Teacher's Beliefs and Practices Before and After Mathematics In-Service (The Louisiana State University and Agricultural and Mechanical Col.). DAI-A 56/03, p. 818, Sep 1995. [AAC 9524445]

Findings indicated changes in teaching (n=1) resulted from problems experienced in personal life (which was intertwined with school life). Suppressed beliefs about teaching during personal turmoil. Inservice activities served as catalyst for reflections about teaching.

Tchg, TBlf, Isrv, Mtcg, Soc **(EC & TE)**

Davis, Brent Andrew. (1994). Listening to Reason: An Inquiry into Mathematics Teaching (University of Alberta). DAI-A 56/02, p. 442, Aug 1995. [AAC NN95170]

Speculative essay involving analysis and re-interpretation of several critical issues surrounding the practice of teaching mathematics: nature of mathematical knowledge, the place of education, and the processes of learning. **Phil, Tchg, Lrng**, Comm **(ALL)**

Delyon, Bruce W. (1994). The Mathematics Curriculum Committee: An Interdistrict Collaborative Process (Columbia University Teachers College). DAI-A 55/07, p. 1757, Jan 1995. [AAC 9432505]

Compares cooperative planning and collaboration efforts in a New Jersey district with other districts in state. Success result of cohesion of philosophies, dedication to funding, staff and administration involvement, and flexibility in purpose or procedure.

Curr, Plan, Tech **(K-12)**

Dennis, David. (1995). Historical Perspectives for the Reform of Mathematics Curriculum: Geometric Curve Drawing Devices and Their Role in the Transition to an Algebraic Description of Functions (Cornell University). DAI-A 56/04, p. 1279, Oct 1995. [AAC 9527413]

Secondary math students (n=2) benefited from their experiences with physical curve drawing devices and raised crucial epistemic issues. A mathematical discussion of the tangents, areas, and arclengths of many curves need not be deferred until calculus.

Geom, Cals, Alg, Blf, Att, Comp **(HS)**

Deulofeu Piquet, Jordi. (1993). Cartesian Graphs of Function:A Study of Students' Concepts in Relation to the Significance of Graphics [Els Grafics Cartesians De Funcions:Un Estudi De Les Concepcions Dels Alumnes Centrat En El Significat Del Grafic] (Universitat Autonoma De Barcelona). DAI-C 56/01, p. 13, Spring 1995 Language:SPANISH. [Not available]

Level of comparison between graph and situation in a context is very low and superficial. Interpolation and extrapolation analysis enabled verifying that conception about chosen or built graph can lead to modification of proper meaning of situation (n=97).

Alg, Lrng, Meas (MS)

Diamantis, Maria. (1994). Mathematical Learning Experiences Using Manipulatives, Grades K-12 (Southern Connecticut State University). MAI 33/03, p. 711, Jun 1995. [AAC 1359092]

Describes two sets of manipulatives that can be used throughout grades, K-12, to enhance teaching of concepts in all areas of mathematics. The activities developed provide a continuity through the grades with the same set of manipulatives. **Manp, Tchg, Clln (K-12)**

Diello, Ronald Michael. (1994). The Development of Inquiry Investigations for the Middle School Mathematics Curriculum (Columbia University Teachers College). DAI-A 55/11, p. 3438, May 1995. [AAC 9511035]

Sixth grade students (n=82) enjoyed working on inquiry investigations and were able to remain on-task for extended period of an investigation. They maintained high level of enthusiasm throughout investigations and able to solve posed problems.

Oral, Clln, Aff, Curr (MS)

Doerr, Helen M. (1994). A Model Building Approach to Constructing Student Understandings of Force, Motion and Vectors (Cornell University). DAI-A 55/07, p. 1860, Jan 1995. [AAC 9501378]

How will an object behave if it is traveling down an inclined plane? Students' models provided structure for increased complexity, but not necessarily complete model. Students used multiple representations throughout process; strong role for geometry.

Comp, Geom, Rep (SE)

Donnelly, Joseph Michael. (1993). Predicting Achievement in a Computer Assisted Learning Environment (University of Victoria). MAI 33/02, p. 322, Apr 1995. [AAC MM90167]

Navy technicians (n=50) used computer-based algebra tutorial. Only algebra pre-test significantly predicted achievement on algebra post-test. Learning ability, specific learning aptitude, learning style, and previous computer experience did not.

D/R, Ach, CAI, Alg, Styl, Lrng **(PS)**

Dorn, Maryann Jin-Jen. (1993). The Effect of an Interactive, Problem-Based Hypercard Modular Instruction on Statistical Reasoning (Southern Illinois University at Carbondale). DAI-A 55/09, p. 2770, Mar 1995. [AAC 9505353]

(n=74) Experimental group using HyperCard statistics computer program performed better on sound statistical thinking than group watching statistical videos, Against All Odds.

Comp, Stat, PS, Lrng, Ach **(PS)**

Duncan, Lynn Hardin. (1994). National Education Goal #4: Is Georgia's Teaching Force Adequate? (University of South Carolina). DAI-A 55/07, p. 1758, Jan 1995. [AAC 9430888]

Evidence of teacher shortage found. Fifteen percent of math teachers surveyed report they are not certified by Georgia to teach math. Half held certification at minimum level. One-fourth of principals had experienced recent difficulty finding qualified math teachers.

Tchg, Tchr (HS & TE)

Dyer, David Michael. (1994). The Effects of Computer and Non-Computer Based Instruction on Symbolic, Graphic, and Numerical Representations of Mathematical Functions in Applied College Algebra (University of Maryland College Park). DAI-A 55/11, p. 3438, May 1995. [AAC 9507937]

Results indicate graphic and numerical representations of functions enabled students (n>200) from both treatment groups to analyze a larger variety of functions than those generally considered tenable for the level of the course. **Comp, Alg, Ach, Att (PS)**

Edwards, Barry Wayne. (1993). The Effects of Using Computer-Based Organizational Software for Generating Mathematics Related Concept Maps (Southern Illinois University at Carbondale). DAI-A 55/09, p. 2799, Mar 1995. [AAC 9505354]

Students (n=44) using software, Org Plus, produced concept maps with significantly more branching and levels of hierarchy than those (n=20) using paper and pencil. Females had significantly more complex maps. **Comp, Lrng, Gend, Geom, Att (HS)**

Edwards, Ransford George. (1994). Test-Taking Skills for Sequential Integrated Mathematics Students (Columbia University Teachers College). DAI-A 55/11, p. 3438, May 1995. [AAC 9511038]

After being given a mini-course in test-taking skills, math test scores of high school students (n=57) on Sequential Integrated Mathematics Regents Examination given in New York City public high schools improved significantly. **Ach, Tchg, Assm, D/R (HS)**

Eizen, Irene Etkowicz. (1995). Acquisition and Use of Nonroutine Problem Contexts in Teaching Mathematical Concepts (Temple University). DAI-A 56/06, p. 2156, Dec 1995. [AAC 9535739]

Concludes teachers can acquire a new instructional strategy in mathematics which differs from their perceptions of teaching. Teachers are more likely to use a new strategy where there is ongoing, professional support for the use of the strategy. **PS, Tchg, Isrv (K-12 & TE)**

Erickson, David Ray. (1994). A Two-Year Case Study of a Sixth-Grade Teacher of Mathematics and Her Attempt to Change Her Teaching Practice (The Ohio State University). DAI-A 55/11, p. 3439, May 1995. [AAC 9505194]

Teacher change model posited (n=1) with seven factors for success—goal, conflict, vision, commitment, support, action, and reflection. An eighth fact, executive control, necessary for coordinating related factors; without this, change process appears to plateau.

Isrv, Curr, Mtcg (MS & TE)

Fair, Margaret Reed. (1995). An Internal Belief System: Variables that Influence Eighth-Grade Girls' Mathematics Achievement-Related Behaviors (University of North Texas). DAI-A 56/05, p. 1726, Nov 1995. [AAC 9529919]

Study applied a model of achievement-related behaviors to students (n=353) to see if model described girls' internal beliefs regarding mathematics. Model accounted for 52% of variance in achievement-related behaviors. **Blf, Ach, Gend, Soc, Aff (MS)**

Fasko, Sharla Nichols. (1994). The Effects of a Peer Tutoring Program on Math Fact Recall and Generalization (University of Cincinnati). DAI-A 55/09, p. 2770, Mar 1995. [AAC 9502507]

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Six of the students showed gains in fluency during intervention. Fluency gains were matched by some degree of classwork improvement for all the students. All five students who had maintenance periods sustained those gains during that time. **Grpg, Ach, LD, M/D (EL)**

Fasse, Richard Howard. (1995). Teacher Workstations as Alternative to the Textbook: A Case Study in Mathematics (The University of Rochester). DAI-A 56/05, p. 1743, Nov 1995. [AAC 9532838]

Created HyperCard prototype around 'Developing Area Formulas' and explored how teachers used prototype to create innovative units. Results suggest promise in developing materials and tools like those in prototype, if incorporated into teacher training.

Comp, Plan, Curr, Prsv **(K-12 & TE)**

Fernandez, Clea. (1994). Students' Comprehension Processes During Mathematics Instruction (The University of Chicago). DAI-A 55/08, p. 2310, Feb 1995. [AAC 9501488]

Two lessons' structure, discourse and pace were varied to affect emphasis. Skill acquisition students had higher scores. Sense-building students evidenced forming a more coherent representation of events in a common practice segment as it unfolded.

Lrng, Tchg, Ach **(Not given)**

Ferrell, Mitzi Jaru. (1995). How Three Instructors' Conceptions About Mathematics and Mathematics Teaching Relate to their Instructional Practices (Arizona State University). DAI-A 56/05, p. 1642, Nov 1995. [AAC 9530203]

Teachers' (n=3) conceptions about math and math teaching relate significantly to instructional practices. One instructor did not believe graphing calculators necessary. All gave tests measuring student's ability to strictly perform operations and manipulated symbols.

Tchr, TBlf, GCal, Curr **(PS & TE)**

Fine, Anne Elizabeth. (1995). An Investigation in the Use of Performance Assessment Tasks in Undergraduate Mathematics (The University of Oklahoma). DAI-A 56/05, p. 1696, Nov 1995. [AAC 9530063]

Results indicated performance assessment tasks probably measure a different aspect of mathematical understanding than by short-answer tests. The performance assessment tasks elicited rich information regarding students' (n=65) mathematical understanding.

Alg, Assm, Lrng **(PS)**

Fiol Mora, Ma Lluisa. (1993). Development Framework of Proportional Reasoning in Pupils Aged 12-14:Visualization and Computation (Universitat Autonoma De Barcelona). DAI-C 56/01, p. 13, Spring 1995 Language:SPANISH. [Not available]

Dynamic articulation between numerical and geometrical takes place if subjects (n>12) are confronted with diverse problems. Sometimes, geometrical and numerical appear contradictory. Visual strategy must be gradually connected with quantitative element.

RaPc, PS, Geom, Vis **(MS)**

Fiske, Michael Bryan. (1994). A Comparison of the Effects on Student Learning of Two Strategies for Teaching the Concept of Derivative (The Ohio State University). DAI-A 56/01, p. 125, Jul 1995. [AAC 9516997]

Local linearity group had better understanding of slope, rate of change, derivative, and symbolic differentiation. Secant-tangent group better at sketching derivatives of functions. Both had similar overall results on posttest (n=55). **Cals, Tchg, Lrng**, Comp, Ach **(HS)**

Fitzsimmons, Robert Walter. (1995). The Relationship Between Cooperative Student Pairs' Van Hiele Levels and Success in Solving Geometric Calculus Problems Following Graphing Calculator-Assisted Spatial Training (Columbia University). DAI-A 56/06, p. 2156, Dec 1995. [AAC 9533552]

Experimental students (n=76) in second semester calculus and paired by varying van Hiele levels had significantly better achievement than control group in scores on volume-of-solid-of-revolution problem. There were significant differences in van Hiele-level pairings.

Grpg, Cals, Lrng, GCal, Ach, Geom **(PS)**

Fogarty, Mary Lou Meinhold. (1994). An Urban Education Study: Implementing Problem-Solving Strategies in Mathematics as a Function of Teacher's Learning Styles (Old Dominion University). DAI-A 56/01, p. 84, Jul 1995. [AAC 9514742]

Findings indicate association between a teacher's (n=67) learning style and degree of success with which Problem Solver Program is implemented. Active teaching and learning programs will only become institutionalized to extent concerns of teachers are met.

PS, Styl, Tchr (MS & TE)

Foletta, Gina Marie. (1994). Technology and Guided Inquiry:Understanding of Students' Thinking While Using a Cognitive Computer Tool, the Geometer's Sketchpad, in a Geometry Class (The University of Iowa). DAI-A 55/08, p. 2311, Feb 1995. [AAC 9433629]

Four grounded hypotheses partially portray students' (n=4) tool-thinking during small group interactions. Factors contributing to students' inquiry include role of Sketchpad, design of investigations, and nature of peer interactions. **Geom, Comp**, PS, Lrng, Comm **(HS)**

Fossa, John Andrew. (1994). Intuitionist Theory of Mathematics Education (Texas A&M University). DAI-A 55/10, p. 3124, Apr 1995. [AAC 9506631]

Foundational positions of intuitionism examined from ontological, epistemological, and ethical points of view in order to adduce outlines of an intuitionist theory of math education. Insights used to respond to criticisms of constructivism and suggest new directions.

Phil, Lrng (ALL)

Fouche, Katheryn Kirk. (1993). Problem Solving and Creativity:Multiple Solution Methods in a Cross-Cultural Study in Middle Level Mathematics (University of Florida). DAI-A 55/07, p. 1860, Jan 1995. [AAC 9431944]

Reflective problem solving activities significantly increased solution methods and level of complexity for a nonroutine math problem. US eighth graders had more alternative methods than Japanese eighth graders; no differences in level of complexity.

PS, Mtcg, CC, Tchg **(MS)**

Fox, L. Sidney. (1995). Effects of Practice of Basic Addition Facts on Third Graders' Arithmetic Performance (The Claremont Graduate School). DAI-B 55/12, p. 5586, Jun 1995. [AAC 9513225]

(n=72) Computer drill group's motivation did not decrease; they decreased response time for practiced addition facts more than math game or control groups, but it didn't help higher-order math tasks. Math game group decreased errors for unpracticed facts.

A/S, Ach, Lrng, Comp **(EC)**

Franklin, Margaret Lee. (1994). The Relationship Between Retention in First Grade and Later School Success for Specific Subgroups of Children (University of South Carolina). DAI-A 55/07, p. 1820, Jan 1995. [AAC 9430894]

Males performed at or above levels of females on mathematics (n=83) except in Grade 4. Black retainees performed better on most measures than white retainees; no consistent pattern of gains or declines noted. High rate of retention for black students.

Ethn, Ach, Curr, Gend, Tchg **(EC)**

Frerking, Bonnie Giddens. (1994). Conjecturing and Proof-Writing in Dynamic Geometry (Georgia State University). DAI-A 55/12, p. 3772, Jun 1995. [AAC 9507424]

Control class was taught using deductive approach. Abilities to conjecture and justify conjectures directly related to proof-writing abilities. Gains of van Hiele levels, entering geometry knowledge, differences in proof-writing abilities were not significant (n=53).

Geom, Prf, Lrng, Comp, Ach **(SE)**

Frost, Diane Lee. (1995). Elementary Teachers' Conceptions of Mathematics Staff Development and Their Roles as Workshop Leaders (The University of North Carolina at Greensboro). DAI-A 56/06, p. 2157, Dec 1995. [AAC 9531836]

Teachers (n=45) preparing to become workshop leaders in TEACH-STAT believed effective leaders should possess strong content knowledge and be sensitive to prior knowledge, different experiences, and various needs of workshop participants.

Isrv, TBlf, TKnw, Stat **(EL & TE)**

Fyfe, Stephen Andrew. (1995). Computational Science Projects and the Development of Mathematical Problem-Solving Skills in Secondary Students (Iowa State University). DAI-A 56/05, p. 1743, Nov 1995. [AAC 9531742]

Students improved understanding of iterative function with transfer to similar problem; high math ability students and males more likely to improve. No improvement in modeling functions using variables. Insufficient project support for developing concepts.

PS, Comp, Alg, Gend, Ach **(SE)**

Gadanidis, George. (1994). Teaching As Personal Expression: A Study of the Visions and Practice of Two Preservice Mathematics Teachers (University of Toronto). DAI-A 55/12, p. 3814, Jun 1995. [AAC NN92624]

Given opportunities and support for personal expression in teaching, preservice teachers (n=2) find creative ways for translating visions into practice. Their past, anticipated life experiences, and reflections on practice are reflections of them as teachers and people.

Prsv, Tchg, TBlf, Grpg, Comp **(SE & TE)**

Galindo, Herendira Garcia-De. (1994). An Investigation of Factors Related to Preservice Secondary Mathematics Teachers' Computer Environment Preferences for Teaching High School Geometry (The Ohio State University). DAI-A 55/10, p. 3125, Apr 1995. [AAC 9505203]

When teaching geometry with computers (n=4):Intuitive-Feeling teacher plans to do calculations; Intuitive-Thinking to generate conjectures; Sensing-Thinking to teach curriculum (may prefer teacher-centered instruction); Sensing-Feeling to review basic skills.

Comp, Geom, Styl, TAtt, Tchg (SE & TE)

Galindo-Morales, Enrique. (1994). Visualization in the Calculus Class:Relationship Between Cognitive Style, Gender, and Use of Technology (The Ohio State University). DAI-A 55/10, p. 3125, Apr 1995. [AAC 9505202]

Nonvisualizers scored significantly better than visualizers in no-technology and Mathematica sections (n=139). No significant differences in visualizer and Nonvisualizers scores in graphing-calculator sections. No significant change in preferred modes.

Cals, Styl, Vis, GCal, Comp, Gend (PS)

Gamble, Marvin Eugene. (1994). Problem-Solving in Mathematics Using the Robert Karplus Learning Cycle (University of South Dakota). DAI-A 55/07, p. 1860, Jan 1995. [AAC 9433208]

No significant difference in achievement. Test scores from previous 3 years (not part of this study) examined; scores between second and fourth chapters, when learning cycle was used, significantly higher than same two chapters from earlier years. **PS, Lrng, Gend (HS & PS)**

Garegae-Garekwe, Kgomotso Gertrude. (1994). Cultural Games and Mathematics Teaching: A Study of Teachers in Botswana (University of Alberta). MAI 33/04, p. 1042, Aug 1995. [AAC MM94934]

Teachers (n>10) had little experience in using cultural games in math teaching, but showed interest. Geometry most common topic embedded in mhele game. No relationships found between use of cultural games and years of experience or academic qualification.

Tchg, Ethn, Geom (EL & TE)

Garneau, Marc. (1994). L'impact De Certaines Caracteristiques D'items Sur Les Composantes Internes De L'habilete, A Resoudre Des Problemes Mathematiques Ecrits (Universite Laval). DAI-A 55/10, p. 3168, Apr 1995 Language:FRENCH. [AAC NN91568] [Title in English: The Impact of Certain Characteristics of Items on the Internal Components of Problem Solving Ability for Written Mathematics Problems]

Three tests administered to secondary students (n=759) to determine effects of format, length, and context on problem solving ability. Only format of an item seemed to have an impact.

PS, Ach (SE)

Gattuso, Linda. (1993). Les Conceptions Personnelles Au Sujet De L'enseignement Des Mathematiques Et Leur Reflet Dans La Pratique:Un Essai D'autoanalyse (Universite De Montreal). DAI-A 55/08, p. 2311, Feb 1995 Language:FRENCH. [AAC NN89089] [Title in English: Personal Conceptions of the Teaching of Mathematics and Their Reflection in Practice: An Attempt at Self-Analysis]

Model presented for self-analysis of relation between one's ideas about teaching and his/her actual teaching practices. Use of model showed coherence between ideas and practice, and illuminated obstacles to implementing ideas. **TBlf, TAtt, Tchg (TE)**

Geskus, Elsa Louise. (1994). Preservice Elementary Education Students' Beliefs Regarding the Teaching and Learning of Mathematics (Western Michigan University). DAI-A 55/09, p. 2736, Mar 1995. [AAC 9502502]

Surveyed entering and exiting students of three content classes and one methods class in math on nature of teaching math, nature of learning math, and nature of underlying source of their success/failure in math. Support for hypothesis that there is change in beliefs.

Blf, Prsv (EL & TE)

Gibb, Gordon S. (1994). The Effects of Teacher Only and Teacher/Paraprofessional Flash Card Drill and Student Acquisition of Multiplication Facts (The University of Utah). DAI-A 55/08, p. 2344, Feb 1995. [AAC 9502204]

All subjects in teacher/paraprofessional condition reached criterion; one subject reached criterion in teacher only condition. Subjects in teacher/paraprofessional condition had more average daily correct responses and provided all with more opportunities to respond.

LD, M/D, Clln, Tchg, Ach **(MS)**

Gibbons, Shelia Stewart. (1994). The Effects of a Business Simulation on Mathematics Performance and Attitudes Toward Learning for a Sample of First-Grade Students (California State University, Long Beach). MAI 33/03, p. 704, Jun 1995. [AAC 1359687]

Simulation group made significantly greater gains in areas of addition and counting money (n=35). Attitudes toward learning processes, mathematics, and teachers were more positive for students in the traditional instruction situation. **Curr, Ach, Att**, PlcV, A/S, Manp **(EC)**

Gierl, Mark John. (1993). Evaluating Bloom's Cognitive Levels in the Table of Specifications for a Grade 6 Mathematics Achievement Test (University of Alberta). MAI 33/01, p. 35, Feb 1995. [AAC MM88238]

Results indicated that Bloom's taxonomy does not provide an accurate model to guide item writers for anticipating the cognitive processes used by students (n=30).

Assm, Lrng (MS)

Goff, Ginger Nelson. (1995). Assessing the Impact of Tracking on Individual Growth in Mathematics Achievement Using Random Coefficient Modeling (University of California, Los Angeles). DAI-A 56/03, p. 855, Sep 1995. [AAC 9523572]

Results from examining Longitudinal Study of American Youth data suggest that negative effects of tracking are greater than beneficial ones. Being placed in the low track is detrimental to students' mathematics achievement. **Grpg, Ach**, Blf **(SE)**

Goins, Rita Faye. (1994). A Comparative Study of Chapter I Sixth Grade Middle School Students' Attitudes and Achievement in Mathematics (The University of Tennessee). DAI-A 55/07, p. 1820, Jan 1995. [AAC 9432204]

No differences between stanine groups (1-5); females and males revealed positive attitudes toward math; lower and middle SES students positive toward math; students from single parent households in stanines 1 and 2 revealed negative attitudes toward math (n=113).

Soc, Ach, Att, Gend **(MS)**

Golden, Peggy Cornish. (1994). An Analysis of the Relationship Between the Mathematics Achievement and the Mathematics Course Participation of African American Students in a Suburban School District (University of Maryland College Park). DAI-A 56/04, p. 1280, Oct 1995. [AAC 9526335]

Completed longitudinal study on math achievement and math course participation of African American students (n=235). Significant differences in level of performance of African American students by grade but not by gender as compared to other students.

Ethn, Ach, D/R, Gend, Curr **(K-12)**

Golding, Tena Long. (1994). The Effects of the Unit Concept on Prospective Elementary Teachers' Understanding of Rational Number Concepts (The Louisiana State University and Agricultural and Mechanical Col.). DAI-A 55/11, p. 3439, May 1995. [AAC 9508570]

Pre-service elementary students' (n=5) awareness of their unit-concept informal knowledge promotes understanding. Students accustomed to focusing on unit may more readily recognize intuitive and authentic connections between natural and rational numbers.

Frac, Mtcg, Prsv, Lrng **(EL & TE)**

Gomez Alfonso, Bernardo. (1994). Mental Calculation Methods: An Analysis of Students in a Teacher Training College (Universitat De Valencia). DAI-C 56/02, p. 313, Summer 1995 Language:SPANISH. [Not available]

Students apply self-adapted or self-invented processes related to influence of previous knowledge, seemingly because of students' misunderstanding of properties of certain numerical situations which have not been explicitly shown and conceived as true.

LT, Arth, Decm **(PS)**

Gonte, Sonia Jennifer. (1993). The Effect of Enhanced Self-Efficacy and the Contribution of Attributions for Success or Failure in Mathematics to The Attainment of Math Skills in a High School Population (University of Detroit Mercy). DAI-B 56/03, p. 1698, Sep 1995. [AAC 9519622]

To examine whether self-efficacious beliefs in math abilities contributed to greater success, various levels of self-efficacy enhancement were introduced among students enrolled in more slowly paced algebra courses. Results not given in abstract. **Aff, Blf, Ach**, Alg **(HS)**

Goodson-Espy, Tracy Jo. (1994). A Constructivist Model of the Transition from Arithmetic to Algebra:Problem Solving in the Context of Linear Inequality (Peabody College for Teachers of Vanderbilt University). DAI-A 55/11, p. 3439, May 1995. [AAC 9511433]

Solvers (n=5) not completing transition dealt with linear inequality as a critical point. Solvers making successful transition used equations before inequalities. Illustrates how Cifarelli's reflective abstraction specifies details of Sfard and Linchevski's theory of reification.

Alg, Arth (SE)

Gordon, Ann. (1995). How Less Capable Students Stimulate Mathematical Talk and Thinking in a Heterogeneous Learning Group (University of Illinois at Chicago). DAI-A 56/05, p. 1710, Nov 1995. [AAC 9529736]

Students (n=4) engaged in lengthy, student-dominated discussions characterized by sustained mathematical discourse, collaboration, and autonomous engagement. Student with poor academic history developed math expertise and contributed to thinking of others.

Grpg, Oral, Ach, Clln **(EL)**

Grant, Scott Geoffrey. (1994). The Variation in Teachers' Responses to Reading, Writing, and Mathematics Reforms (Michigan State University). DAI-A 55/12, p. 3742, Jun 1995. [AAC 9512058]

Two themes emerged: (1) Responses to reforms vary across teachers (n=4) and classrooms, even when teachers work in the same context. (2) Knowing how a teacher interprets reading reforms guarantees no similar interpretation of math or writing reforms.

Curr, TAtt (EL & TE)

Grapin, Marilyn Kopatz. (1994). Analysis of Pedagogical Assumptions in the Instructional Design of the Video Homework Adventures in Middle School Mathematics Project (New York University). DAI-A 55/09, p. 2698, Mar 1995. [AAC 9502415]

Results of VideoMATH's first field test did not support assumption that eighth graders have negative attitudes toward math. Mixed support for assumptions about effects of situatedness, parental involvement, and video-based multimedia on math attitudes. **Tech, Att, Soc (MS)**

Grewer, Dennis Michael. (1994). Mathematics and Science Curriculum Implementation at Forty-Niner Elementary School (University of Southern California). DAI-A 56/03, p. 809, Sep 1995. [Not available]

Research questions included: (1) What were critical implementation factors associated with effective implementation? (2) What changes in classroom practice resulted from effective implementation? (3) What were outcomes? Findings not listed in abstract.

Curr, Tchg (EL)

Griffith, Joseph Benton, III. (1994). Causal Attributions and Task Persistence of Learned-Helpless and Mastery-Oriented Sixth Graders in Math, Physical Education, and Reading (The University of North Carolina at Greensboro). DAI-A 55/09, p. 2762, Mar 1995. [AAC 9502679]

Learned-helpless students exhibited lower percentage of on-task behaviors in math. Learned-helpless students viewed failure as being out of their control half the time; mastery-oriented students viewed failure as within their control 75% of the time. (n=23).

LT, Att, Aff, Ach **(MS)**

Gross Ray, Sharon Jean. (1994). A Counseling Approach to Teaching Middle School Minority Students (University of San Francisco). DAI-A 55/09, p. 2720, Mar 1995. [AAC 9433226]

No significant difference between the treatment and control groups was found indicating that the use of counseling techniques in class did not affect students' language, mathematics, science, or social studies achievement (n=75). **Att, Tchg, Ethn**, Ach **(MS)**

Gullanartsiri, Panthong. (1994). A Comparison of Two Types of Lessons Involving Teaching and Learning Multiplication and Division of Decimals in Grade 6 (The University of Iowa). DAI-A 55/08, p. 2311, Feb 1995. [AAC 9433635]

Sixth-grade students (n=1,075) in Bangkok, Thailand compared using 1978 materials and 1992 materials. No significant differences found in achievement in computation, understanding of concepts, or story problem solving. **M/D, Decm, Curr**, Ethn, Ach, Lrng **(MS)**

Haguel, Marie-Jane. (1994). L'enseignement A Des Eleves Du Collegial Des Concepts De Variables Et De Fonction A L'aide De La Programmation Fonctionnelle En Logo Et De La Modelisation (Ecole Polytechnique, Montreal). DAI-A 56/04, p. 1259, Oct 1995 Language:FRENCH. [AAC NN95769] [Title in English: Instruction of College Students in the Concepts of Variable and Function through Functional Programming in Logo and Modeling]

Describes model for analysis of instructional program in precalculus on the concepts of variable and function. Phases included before-implementation, a priori analysis of concepts and sequence, implementation/experimentation, and a posterior analysis.

Assm, Cals, Lrng, Alg, Rep, Comp **(PS)**

Halpin, Regina Faye. (1994). An Investigation of the Statistical Power of Inferential Research Published in Mathematics Education Journals (Auburn University). DAI-A 55/12, p. 3729, Jun 1995. [AAC 9512643]

Encourages researchers/reviewers of mathematics education journals to consider statistical power analyses as essential in planning inferential research to determine adequate level of significance, effect size, and sample size needed to evaluate null hypothesis.

Stat, Assm, Rsch, Revw **(ALL)**

Hamilton, William Alexander. (1995). A Meta-Analysis of the Comparative Research on Computer-Assisted Instruction and Its Effects on Elementary and Secondary Mathematics Achievement (Wayne State University). DAI-A 56/05, p. 1599, Nov 1995. [AAC 9530547]

Significant achievement differences were found for students crossing all ability levels in 41 studies selected. No significant subgroup differences were found for low, average and high ability-level students, nor between males and females. **Ach, CAI**, Gend **(K-12)**

Hancock, Carol Lynn. (1994). Effects of a Revised End-Of-Course Test for First-Year Algebra (University of Georgia). DAI-A 56/02, p. 483, Aug 1995. [AAC 9520826]

Open-ended questions, real-world problems, and questions incorporating graphing calculators included on revised Algebra I End-of-Course Test. Teachers (n=4) showed little evidence of influence by revisions to make substantial changes in assessment. **Alg, Assm, Curr (SE)**

Hancock, Sabrina Jane Cox. (1994). The Mathematics and Mathematical Thinking of Seamstresses (University of Georgia). DAI-A 55/10, p. 3125, Apr 1995. [AAC 9507214]

Seamstresses (n=4), carpenters, and carpet layers used estimation, measurement, spatial visualization, and problem solving. Estimation was common. Non-normative measuring was used. Workplace generated few problems solved with math formulas.

Est, Manp, PS, Geom, Vis **(PS)**

Haney, Amanda E. (1994). Problem-Solving Behavior of Cooperative Pairs in a Fifth-Grade Mathematics Class (University of Pittsburgh). DAI-A 56/01, p. 126, Jul 1995. [AAC 9521426]

Most heterogeneous group characterized by competition. In spite of high degree of collaboration by three of four pairs, role of teacher integral to students' success (n=8). Homogeneous pair did more exploration during orientation/organization phase. **Grpg, PS, Tchg (MS)**

Hankes, Judith Elaine. (1995). Native American Pedagogy and Cognitive-Based Mathematics Instruction (The University of Wisconsin - Madison). DAI-A 56/02, p. 483, Aug 1995. [AAC 9513779]

Oneida culture-based teaching methods correspond with generalized Native American pedagogy. Teaching methods of Native American pedagogy correspond with CGI teachers. Oneida kindergartners in taught with CGI demonstrated mathematical problem solving success.

Ethn, Lrng, Tchg (EC)

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Harper, Linda C. (1995). The Re-Entry Female Student in Mathematics:A Study of Affective Variables that Contribute to Persistence and Success (Temple University). DAI-A 56/04, p. 1211, Oct 1995. [AAC 9527483]

Nontraditional-age student exhibits higher success rates and appears more highly motivated to succeed. Affective variables were not significantly different for the two age groups. Self confidence as learner of math had highest correlation to success.

Gend, Aff, Lrnr, Anx, Att, Blf **(PS)**

Harper, Norma Jean Wynn. (1994). The Effect of a Mathematics Methods Course on Elementary Preservice Teachers' Beliefs About the 'Standards' and Their Level of Mathematics Anxiety (The University of Alabama). DAI-A 56/03, p. 855, Sep 1995. [AAC 9522699]

At completion of methods course, preservice teachers' (n=53) beliefs about Standards agreed significantly more with Standards, and the level of math anxiety had decreased significantly.

TBlf, Anx, Prsv, Curr **(EL & TE)**

Harris, Edgar Wayne. (1995). Identification and Analysis of Significant Factors that Influence Black Male High School Students to Take College-Preparatory Mathematics Classes (Harvard University). DAI-A 56/03, p. 827, Sep 1995. [AAC 9522277]

Black male students (n=24) in a suburban school district, taking more than required number and level of math, appeared focused on their plans and understood what was required to attain their career goals. Family members conveyed high expectations. **Ethn, Soc (HS)**

Harrison, Julie Anne. (1994). Children's Understanding of Fractions in Northern Ireland and Hong Kong (Queen's University of Belfast). DAI-C 56/02, p. 314, Summer 1995. [Not available]

The dominance of part-whole model and lack of recognition of fractions as numbers are areas that need to be addressed in instruction. A number of lessons can be learned from the approach that is taken by Chinese schools in Hong Kong (n=534). **CC, Frac, Lrng (K-12)**

Hartog, Martin Dirk. (1995). Methods Courses and Field Experiences Influences on Preservice Secondary Mathematics Teachers' Beliefs about Their Role in Mathematics Classroom Discussion: Four Case Studies (The Ohio State University). DAI-A 56/04, p. 1280, Oct 1995. [AAC 9526033]

Preservice teachers' (n=4) exposure to teaching methods recommended by Standards during methods class affect changes in expressed beliefs about their role in conducting discussions. Behavior did not reflect changes without support of cooperating teachers and supervisors.

TBlf, Oral, ClIn, Curr, Tchg **(SE & TE)**

Haynes-Gainey, Patricia. (1994). Seventh Graders' Learning of Ratio and Proportion in a Cooperative Setting (Indiana University). DAI-A 56/04, p. 1307, Oct 1995. [AAC 9527826]

Concept-development and problem-solving preferred over skill-development by students (n=12). Group rewards, goals, and subdivided tasks more effective in encouraging students to positively depend on each other than established roles or shared resources.

RaPc, Grpg, Lrng, PS, Assm **(MS)**

Heaton, Ruth Mary. (1994). Creating and Studying a Practice of Teaching Elementary Mathematics for Understanding. (Michigan State University). DAI-A 55/07, p. 1860, Jan 1995. [AAC 9431254]

Learning to teach (n=1) math for understanding entails continuously inventing practice of teaching while doing it. Developed repertoire of pedagogical options, representing mix of old and new practices. Pedagogy is deeply connected to understanding math.

Isrv, Curr, Plan, Lrng **(EC & TE)**

Hechler, Ellen. (1995). The Relationship of Sixth-Grade Mathematics Textbooks and The 1993 Seventh-Grade Michigan Educational Assessment Program Test (Wayne State University). DAI-A 56/05, p. 1696, Nov 1995. [AAC 9530549]

Although Houghton Mifflin text appeared most consistent with the MEAP framework, it was rated lower with respect to effectiveness of application. Schools with higher rated texts (Glencoe and Addison-Wesley) had higher math'test scores. **Curr, Assm (MS)**

Herman, Sally Joan. (1994). Connecting Math Performance to the Representation of Mathematical Ideas: A Study of 6th Grade Students in China, Japan, Taiwan, and the United States Of America. (University Of California, Santa Barbara). DAI-A 55/08, p. 2275, Feb 1995. [AAC 9500264]

Differing achievement (n=895) and weak relationships between computational performance and conceptual understandings. Asian students' patterns different from Americans, preferring quotient/decimal/ratio models to part/whole models for rational numbers.

CC, Ach, Rep, Geom, Lrng **(MS)**

Hewitt, David Paul. (1994). The Principle of Economy in the Learning and Teaching of Mathematics (Open University). DAI-C 56/02, p. 314, Summer 1995. [Not available]

Economy:Personal time and effort given by learner to achieve desired learning. Identifies powers children use in early learning. Principles of economy provide guidelines for making use of children's powers. Software developed to demonstrate its use.

Comp, Lrng, Prob **(K-12)**

Hillen, Judith Ann. (1994). Perceived Effects of Participation in Activities Integrating Mathematics and Science. (University of Southern California). DAI-A 55/08, p. 2265, Feb 1995. [Not available]

The study sought to observe and describe a hands-on, integrated mathematics and science program. Outcomes included students' (n=2025) ability to communicate their understanding of mathematics and science and their enjoyment of these disciplines.

Comm, Lrng, IC, Soc, TAtt, Att **(EL)**

Hintz, Phillip A. (1994). A Study of Relationships Among High School Coursework, Low and High Family Income Levels and American College Test. (The University of Iowa). DAI-A 56/04, p. 1307, Oct 1995. [AAC 9524856]

Low family income ACT examinees (n=21,703) take significantly fewer core courses, especially in geometry, trigonometry, calculus, chemistry and physics. Gender imbalance noticeable among low income examinees with fewer females taking math.

Assm, Gend, Soc, Geom, Cals, Curr **(HS)**

Hodgkins, Mildred Ann. (1994). Students' Understanding of the Concept of a Variable: Comparison of Two Teaching Methods (Christopher Newport University). MAI 33/06, p. 1646, Dec 1995. [AAC 1374640]

Eighth grade pre-algebra students in learner-focused classroom scored significantly higher on post-test than students in classroom-focused class. **Lrng, Alg, Ach (MS)**

Holley, John David. (1995). An Evaluation of Heterogeneous Grouping Practices in Sixth and Seventh-Grade Mathematics at North Kirkwood Middle School (Saint Louis University). DAI-A 56/06, p. 2157, Dec 1995. [AAC 9531404]

Interviews of students, parents, and math teachers (n=81) led to conclusion that most critical factor in challenging, motivating, developing self-esteem, and enhancing school climate is not the organizational structural pattern, but is the classroom teacher.

Grpg, Aff, Tchg, Assm (MS)

Hong, Gun-Pyo. (1994). Attitudes of Doctoral Students Toward Required Statistics Courses in the College of Education at Mississippi State University (Mississippi State University). DAI-A 55/10, p. 3093, Apr 1995. [AAC 9507524]

All doctoral students (n=220) believed knowledge of statistics would be helpful in their current and future careers. Significant differences in attitudes in relation to gender, major emphasis in doctoral programs, and stage of completing statistics requirements.

Stat, Att, Blf (PS)

Horsey, Linda. (1995). Exploration of Teaching Styles and Urban Student Achievement in a Pre-Algebra Math Unit (Columbia University Teachers College). DAI-A 56/04, p. 1199, Oct 1995. [AAC 9525488]

Urban mathematics teachers did have a preferred teaching style. The instrument used (Heikkinen's Teaching Style Q-Sort) to assess self-identified teaching styles was not refined enough to say that teaching style had an effect on student achievement.

Ach, CIIn, Alg, Mtcg (MS & TE)

Houle, Robert Paul. (1994). Environmental Biology, Geometry, and Technology for Average Tenth-Grade Students: Design and Evaluation of an Integrated Curriculum (Columbia University Teachers College). DAI-A 55/07, p. 1810, Jan 1995. [AAC 9432529]

Achievement test results of this interdisciplinary course (n=26) showed greater gains in geometry compared to biology. No statistically significant differences between males and females. Students most successful with concepts taught in highly integrated approach.

IC, Geom, Tech, Gend, Ach (HS)

Hughes, Raymond Carroll. (1994). A Study of the Kumon Method Used as an In-School Supplemental Program to Traditional Mathematics Instruction in the Fourth Grade (The University of Mississippi). DAI-A 55/07, p. 1861, Jan 1995. [AAC 9431566]

For low ability group, traditional instruction significantly more effective on achievement for total math, concept knowledge, and application skills than Kumon and traditional methods combined (n=123). Otherwise, combining methods had no significant effect.

Ach, Lrng, Tchg (EC)

Hunnicutt, Frankel Steve. (1994). Assessment of Mathematical Problem-Solving Proficiency of Agricultural Education Teachers in Alabama (Mississippi State University). DAI-A 55/10, p. 3070, Apr 1995. [AAC 9507526]

Math proficiency of teachers was not as high as expected from a group instructing students in math problems related to agriculture. High percentage of teachers would have difficulty integrating mathematics into curriculum without materials and inservice assistance.

PS, Ach, Assm (SE & TE)

Hunt, Barbara Gayle. (1994). The Effect of Homogeneous and Heterogeneous Grouping of Gifted Sixth-Grade Students on Mathematics Achievement and Attitude (University of Houston). DAI-A 56/02, p. 484, Aug 1995. [AAC 9516742]

Gifted students benefited most from homogeneous grouping based on exploratory findings, completion of mathematics activities, and qualitative data (n=208).

Gift, Att, Grpg, Ach **(MS)**

Huntington, Deborah Joan. (1994). Instruction in Concrete, Semi-Concrete, and Abstract Representation as an Aid to the Solution of Relational Problems by Adolescents with Learning Disabilities (University of Georgia). DAI-A 56/02, p. 512, Aug 1995. [AAC 9520828]

Students (n=3) reached 100% accuracy over three consecutive sessions. Skills maintained for maximum of 9 weeks. Students transferred learning to problems of same difficulty level but different surface structure, more difficult math structure, and different settings.

LD, Alg, Rep, PS, Manp, Lrng **(SE)**

Ibe, Richard Eze. (1995). The Enduring Effects of Productivity Factors on Eighth Grade Students' Mathematics Outcome (University of Illinois at Chicago). DAI-A 56/06, p. 2173, Dec 1995. [AAC 9532399]

Reinforces relationship between aptitude, environment, and instruction by finding significant relationships between these factors and measures of student learning. Provides information on how some productivity factors mediated effects of other factors.

Soc, Ach, Tchg, Assm **(MS)**

Igboko, Agodi. (1994). Numberland: A Cai Lesson in Math Word Problems (California State University, Dominguez Hills). MAI 33/04, p. 1054, Aug 1995. [AAC 1360325]

Significant increase in fourth-graders' (n=35) posttest mean over pretest; increase in addition and subtraction problems greater than multiplication and division problems. Students had positive attitudes toward CAI.

CAI, A/S, M/D, Ach, Att **(EC)**

Isaacs, Andrew Charles. (1994). Whole Number Concepts and Operations in Grades 1 And 2: Curriculum and Rationale (University of Illinois at Chicago). DAI-A 55/10, p. 3125, Apr 1995. [AAC 9506490]

Thesis consists of certain curricular materials with rationale. Comprehensive math curriculum includes greater attention to process, affect, and metacognition; more group work, tool use, and contextualized problems, and less symbol manipulation.

Whol, Lrng, Curr, Mtcg, Grpg, Manp **(EC)**

Ismail, Mokhtar Bin. (1994). Development and Validation of a Multicomponent Diagnostic Test of Arithmetic Word Problem Solving Ability for Sixth-Grade Students in Malaysia (University of Pittsburgh). DAI-A 55/08, p. 2356, Feb 1995. [AAC 9431526]

Data supports hypothesis that items from standardized examination can be cognitively linked to their semantic relations. Test design is practical when class size is large and teachers do not have opportunity to provide individual diagnostic assessment (n=1,255).

Assm, Arth, D/R, Ethn **(MS)**

Ivey, Kathy Marie Cooper. (1994). World Views in the Mathematics Classroom:Students Translating Beliefs into Actions (Washington State University). DAI-A 55/12, p. 3773, Jun 1995. [AAC 9512759]

Students (n=3) who experience metaphorical dissonance between their own world views and world view of a new classroom culture respond by rejecting or contesting new expectations and attempting to reshape culture to make it more compatible with their views.

Blf, Soc, Clln, Alg **(MS)**

Jaime Pastor, Adela. (1993). Contributions to the Interpretation and Application of the Van Hiele Model:The Teaching of Plane Isometries. The Evaluation of the Level of Reasoning [Aportaciones A La Interpretacion Y Aplicacion Del Modelo De Van Hiele:La Ensenanza De Las Isometrias Del Plano La Evaluacion Del Nivel De Razonmiento] (Universitat De Valencia). DAI-C 56/02, p. 314, Summer 1995 Language:SPANISH. [Not available]

To assess 'degree of acquisition' of each level of reasoning, developed method valid for open-ended questions (oral or written). Proposed design of written items which improve information from paper and pencil tests, making it closer to interviews.

Geom, Assm, D/R, Oral, Wrt, Lrng **(Not given)**

Jamison, Margaret Godwin. (1994). An Exploration of Extra and Classroom Variables for Three Measures of College Mathematics Achievement (Virginia Polytechnic Institute and State University). DAI-A 55/09, p. 2753, Mar 1995. [AAC 9502721]

(n=175) High school performance explained most variation measures of math achievement. Demographic characteristics and attitudes do not significantly influence measures of achievement. Some Myers-Briggs Types significant predictors of achievement.

Ach, Assm, Cals, Grpg, Aff, Alg **(PS)**

Jia, Chengxiang. (1994). The Relationships of Student Learning Styles, Computer Attitudes, and Learning Outcomes in a Mathematics Course Using a Cai Lab (Kansas State University). DAI-A 55/09, p. 2800, Mar 1995. [AAC 9502759]

More concrete learners liked computers than abstract learners (n=101). Achievement significantly higher for concrete learners than abstract learners. No significant difference between students with low and high attitudes towards computers. **Styl, Comp, Att,** Ach **(PS)**

Johnson, Loren Phaffle. (1995). Extending the National Council of Teachers of Mathematics' 'Recognizing and Recording Reform in Mathematics Education' Documentation Project Through Cross-Case Analyses (University of New Hampshire). DAI-A 56/05, p. 1696, Nov 1995. [AAC 9528765]

Findings center on how pedagogical shifts by teachers influenced way students do and understand mathematics; how teachers learned and adapted when confronted by complexities involved in reform efforts; and influence of Standards on reform efforts.

Curr, Clln, Tchg (HS)

Johnson, Todd M. (1994). A Teacher's Role and Calculator Tasks in Two Twelfth-Grade Mathematics Courses (The University of Wisconsin - Madison). DAI-A 55/07, p. 1861, Jan 1995. [AAC 9429360]

Access to calculators and ability to use calculators not sufficient conditions to ensure instructional (n=1) use of calculators. Study linked different expectations of a university and a technical college to curriculum differentiation at the secondary level.

Clln, TBlf, GCal, Tchr, Grpg, Calc **(HS & TE)**

Jones, Katherine J. (1994). An Investigation of the Relationship Between Calculator Use and Mathematical Attainment in Special Education Students (D'youville College). MAI 33/02, p. 331, Apr 1995. [AAC 1358091]

Seventh- and eighth-grade special education students' (n=5) had integrated calculator instruction and use for 10 weeks. Mean change scores were not significantly different.

Calc, Ach, LD (MS)

Kahn, Leslie Joan. (1994). Mathematics as Life: Children's Responses to Literature (The University of Arizona). MAI 33/01, p. 29, Feb 1995. [AAC 1358104]

The students' mathematics talk showed that math is used as students respond to literature in informal read aloud discussions and subsequent literature presentations. **Oral (MS)**

Kalustian, Lynne A. (1994). Peer Learning and Status Characteristics: Potential Inequality of Cognitive Opportunity in Problem-Solving Groups (Rutgers The State University of New Jersey - New Brunswick). DAI-A 55/12, p. 3742, Jun 1995. [AAC 9514122]

Black third-graders showed preference for same-race peers. Six Hispanic minority students, as opposed to three Black majority students, held highest-status positions; may have occurred because of ability. Black students not viewed as best in math by Hispanic students.

PS, Ethn, Grpg, Blf **(EC)**

Kanai, Therese Marie. (1994). The Effect of Manipulatives and Brain Dominance on Algebra Achievement (Walden University). DAI-A 56/02, p. 445, Aug 1995. [AAC 9518011]

No significant statistical differences (n=52) due to teaching method found, regardless of brain dominance. Both groups of students exhibited significant learning gains. Results indicated that students in experimental group enjoyed algebra class more.

Alg, Manp, Ach, Att, Styl **(SE)**

Keen, Virginia L. (1994). Mathematics Department Instructors' Conceptualizations of the Roles Mathematics Content Courses Play in Elementary Teacher Education Programs (Michigan State University). DAI-A 55/12, p. 3773, Jun 1995. [AAC 9512078]

Instructors' (n=6) conceptualizations of role math courses required in elementary teacher preparation should play were often idiosyncratic. Predominance of goal of procedural understanding over conceptual understanding. **TKnw, Lrng (EL & TE)**

Keezer, Dolores Sporn. (1994). Teacher Practices and Attitudes in the Classroom Over a Ten-Year Period:A Case Study Investigating the Process of Change (Rutgers The State University of New Jersey - New Brunswick). DAI-A 55/12, p. 3773, Jun 1995. [AAC 9514123]

University/school project resulted in positive effects on fourth and fifth grade teacher (n=2) practice. Practice shifted to listening to children; less focus on teacher as information giver; and use of small groups, manipulatives, and avoidance of 'telling algorithms.'

Tchg, **Isrv**, **Comm**, Curr, Grpg, Manp **(EL & TE)**

Kelly, Stephen James. (1994). A Single Case Study of an Autistic Expert Mental Calculator (MGH Institute of Health Professions). MAI 33/03, P. 897, Jun 1995. [AAC 1359505]

Subject (n=1) faster and more accurate than 5 control subjects solving multi-digit multiplication problems, especially more complex problems. He may use conventional algorithms, but not for 2-digit squares. Able to learn new algorithm, but slower.

LD, **Lrng**, **M/D**, Ach **(Not given)**

Kelly, Wendy May. (1994). Gender Comparisons of Attitudes Towards Mathematics in Streamed And Destreamed Classrooms (University of Toronto). MAI 33/06, p. 1647, Dec 1995. [AAC MM96300]

No significant differences in math achievement scores. Females perceived teachers' attitudes more positively, less stereotypical in thinking about math, perceived math more useful, no more math-anxious, and only less confident in streamed class.

Att, **Gend**, **Grpg**, Blf, Ach **(HS)**

Kidd, Dawn Kimberlee Hoyt. (1995). Reaching More Teachers: Standards-Based Mathematics Inservice for Teachers of Deaf and Second Language Learners (The University of Texas at Austin). DAI-A 56/06, p. 2204, Dec 1995. [AAC 9534832]

Teachers' (n=8) perceptions of teaching mathematics became more nontraditional after a three-week, inservice program, and that some aspects of nontraditional teaching were evident in some of the teachers' observed lessons. **Lang**, **Isrv**, **LD**, TBlf, Curr, Tchg **(K-12 & TE)**

Kim, Jingyu. (1995). The Effects of Computerized Adaptive Testing and Examinee Test Motivation on Algebra Skills, Test Anxiety, and Attitudes (The University of Alabama). DAI-A 56/06, p. 2212, Dec 1995. [AAC 9535884]

For Korean college students (n = 208) test motivation influenced improvement in estimated ability and reduction in test anxiety. Math aptitude and test motivation variables could be the most significant predictors of computerized adaptive test performance.

Comp, **Ach**, **Aff**, Anx, Att, Ethn **(PS)**

Kimball, Jonathan Woodman. (1994). A Comparison of the Effects of Self-Monitoring During or Following Math Practice on Productivity and Accuracy of Fifth Grade Students (The Ohio State University). DAI-A 55/10, p. 3156, Apr 1995. [AAC 9505239]

Preference and performance do not always coincide. Self-monitoring probably adds no benefit to practice for certain students (n=22). Self-monitoring cannot necessarily be implemented as monolithic instructional arrangement. **Ach**, **Mtcg**, Assm **(MS)**

Kimmins, Dovie Louise. (1994). An Exploratory Study of the Relationship Between Young Children's Understanding of Randomness and Piagetian Developmental Level (The University of Tennessee). DAI-A 56/04, p. 1280, Oct 1995. [AAC 9527221]

Little evidence children age 4 or 5 have ability to distinguish between random and regular pattern of outcomes. Most children ages 6 and 7 had ability when criterion was judgment; 1/3 of 6-year-olds and 2/3 of 7-year-olds provided adequate explanations. **Prob, Patt, Lrng (EC)**

Kinel, Robert. (1994). Cooperative Learning Reducing the Black/White Achievement Gap in Middle School Mathematics (The University of Michigan). DAI-A 55/08, p. 2311, Feb 1995. [AAC 9500868]

Cooperative learning students spent significantly more time on-task. High degree of cooperative learning effective in increasing achievement of all students in math, but appears not effective in decreasing achievement gap between Black and White students.

Grpg, Ach, Ethn, Stat, Prob **(MS)**

Kinsella, Marco Antonio. (1995). Predictors of Performance of Graduates of Pre-College Enrichment Programs (The University of Connecticut). DAI-A 56/05, p. 1688, Nov 1995. [AAC 9530245]

Class rank coupled with study habits and attitudes and birth order comprised the most effective predictors of achievement and persistence among students (n=67). Effects of SAT and family SES were negligible. Half entering college the following fall were first born.

Lrnr, Ach, Soc **(HS & PS)**

Kiragu, Florence Wawiiima. (1994). Mathematics Classrooms in Kenya:A Case Study of Four Standard Six Classrooms (Harvard University). DAI-A 55/11, p. 3439, May 1995. [AAC 9510116]

Teachers (n=4) indicated lack of resources made use of concrete objects difficult, not adequate time for marking students' work, and all believed hard work led to success in math. Teaching characterized by textbook examples and one way of arriving at solution.

Tchg, TBlf, Ethn, Manp **(MS & TE)**

Kistler, Barbara Carr. (1995). Mathematics Preparation of Elementary Teachers in Pennsylvania (Lehigh University). DAI-A 56/05, p. 1657, Nov 1995. [AAC 9530992]

Pennsylvania (n=70) colleges and universities fall short of the nationwide average number of required mathematics-content courses, with state universities having a significantly higher average. Appropriate technology needs to be more uniformly integrated.

TKnw, Prsv, Tech **(EL & TE)**

Klages, Doreen Loberg. (1994). An Analysis of the Factors that Contribute to Instructional Use of Computers in High School Mathematics (Southern Illinois University at Edwardsville). DAI-A 55/12, p. 3773, Jun 1995. [AAC 9509672]

This study focused on teachers (n=90) who use the computer and analyzed the factors that contributed to that use. Thirteen factors were identified as contributing to computer use. The factors of training and support were particularly important.

Comp, TAtt, Tchg **(HS & TE)**

Kline, Kathleen Mary. (1994). Developing Kindergartners' Reasoning with Number Using a Part-Whole Schema (The University of Michigan). DAI-A 56/01, p. 126, Jul 1995. [AAC 9513275]

Emphasizing number reasoning using parts and wholes helped kindergarten children (n=445) gain richer small-number concepts, use more advanced thinking strategies for basic facts, better understand place value, and become better at problem solving.

NSns, PlcV, PS, Lrng, A/S **(EC)**

Kneese, Carolyn Calvin. (1994). Impact Of Year-Round Education On Student Achievement (University Of Houston). DAI-A 55/07, p. 1812, Jan 1995. [AAC 9431020]

Results indicated significant differences in math achievement for all students. Mean scores and effect sizes favored the year round calendar in all comparisons. **Ach, Curr (EL)**

Kolnowski, Linda Weglarz. (1994). The Conceptual Development of Number and Mental Computation in Grade One (The University of Michigan). DAI-A 56/01, p. 126, Jul 1995. [AAC 9513401]

Instruction emphasizing conceptual development of number and mental computation helped first graders' (n=414, 92% African-American) understanding of number, develop strategies to solve addition/subtraction problems, and improved confidence.

NSns, Lrng, PS, Ethn, Att, A/S **(EC)**

Koscinski, Susan T. (1994). Comparison of Teacher-Assisted and Computer-Assisted Instruction Using Constant Time Delay to Teach Multiplication Facts to Students with Mild Disabilities (University of Georgia). DAI-A 55/12, p. 3810, Jun 1995. [AAC 9508787]

In Study 1 (n=4), teacher-assisted instruction and computer-assisted instruction comparably effective. In Study 2 (n=3), computer-assisted instruction more effective for all students; computer-assisted instruction more efficient in terms of teacher time.

LD, CAI, M/D, Tchg **(EC)**

Krussel, Carolyn Elizabeth S. (1994). Visualization and Reification of Concepts in Advanced Mathematical Thinking (Oregon State University). DAI-A 56/01, p. 127, Jul 1995. [AAC 9517901]

Examination of concept images of advanced math undergraduates, math graduate students, and math faculty (n=9) revealed individual nature of visual images used in advanced mathematical thought. **Lrng, Vis, AdvM**, Styl, Rep **(PS)**

Kusch, James William. (1995). Teaching in a Surveillance Mode: A Case Study of How Methods Course Syllabi and Practicum Classrooms Construct Assessment as Classroom Control (The University of Wisconsin - Madison). DAI-A 56/05, p. 1645, Nov 1995. [AAC 9522365]

Found that when student teachers (n=8) attempt to cope with persistent instructional problems (organizing content, developing class schedules and getting pupils engaged in learning activities) they relied on assessment as a mechanism for classroom control.

Assm, Plan, Clln, Prsv **(MS & TE)**

Laberge, Victoria Boller. (1994). Pre-Service Teachers' Attitudes Toward Females and Males, and Mathematics (University of Kansas). DAI-A 56/04, p. 1281, Oct 1995. [AAC 9528384]

Female pre-service teachers had significantly more egalitarian attitudes regarding gender roles than males, and elementary more than secondary. No significant differences in attitudes toward math by gender. More egalitarian types had more positive views of math.

Prsv, Gend, TAtt, TBlf (K-12 & TE)

Larson, Matthew Richard. (1994). The Effect of an Alternative Senior Level Satellite Broadcast Mathematics Course on Students' Attitudes Toward Mathematics and College Mathemathics Placement (The University of Nebraska - Lincoln). DAI-A 55/10, p. 3126, Apr 1995. [AAC 9507816]

Math achievement of distance learning group significantly different than control (n=204). Treatment group scored significantly higher on perceived importance of math. Control group scored significantly higher on college math placement test. **Tech, Ach, Blf, Cals (HS)**

Laub, Cheryl Marie. (1995). Computer-Integrated Learning System and Elementary Student Achievement in Mathematics: An Evaluation Study (Temple University). DAI-A 56/06, p. 2110, Dec 1995. [AAC 9535758]

Suburban, computer-literate, fourth and fifth grade students' (n=314) use of an integrated learning system had a positive impact on achievement in mathematics. Higher-achieving students benefited more than low-achieving students. Expenditures are included.

Ach, Comp, Tchg, Soc **(EL)**

Lee, Jeongwuk. (1995). Korean Kindergarten Teachers' Conceptual Understanding of Mathematics Instructional Content (The University of Wisconsin - Madison). DAI-A 56/02, p. 453, Aug 1995. [AAC 9519065]

Found that (1) beginning and experienced kindergarten teachers (n=38) appeared to have limited knowledge about mathematics instructional content, (2) Piagetian view heavily influences instruction, and (3) emphasized content is far from the NCTM Standards.

TKnw, Plan, Prsv, Curr **(EC & TE)**

Lee, Kyong-Hee Melody. (1994). Error Analysis, Teaching and Testing Concepts Involved in Subtracting Fractions (Columbia University Teachers College). DAI-A 55/07, p. 1861, Jan 1995. [AAC 9432540]

Presents three most frequent errors. Significant difference between experimental and control group posttest score means. No significant difference between posttest and retention test means for experimental group. **Frac, D/R, Assm**, Lrng, Ach **(HS)**

Lemai Tre, Lesley Jane. (1993). Mathematical Comprehension of Adults with Learning Difficulties (University of Alberta). MAI 33/01, P. 36, Feb 1995. [AAC MM88415]

Student (n=1) asked to 'think aloud' while doing equal combinations of addition, subtraction, proper, and improper fractions, each with like and unlike denominators. Errors made could not be attributed to lack of time for memory or cognitive development. **LD, Frac**, Ach **(PS)**

Lesser, Lawrence Mark. (1994). The Role of Counterintuitive Examples in Statistics Education (The University of Texas at Austin). DAI-A 55/10, p. 3126, Apr 1995. [AAC 9506033]

Delineates specific criteria and conditions for selecting counterintuitive examples to achieve numerous cognitive and affective objectives. Addresses difficulty in constructing assessment instruments and multiplicity of terminologies and typologies. **Tchg, Stat**, Assm, Aff **(PS)**

Liles, Edwin Dwain. (1994). A Comparison of Administrator and Researcher Expectations for the Twenty-First Century Middle School Science and Mathematics Programs in Texas (Texas A&M University). DAI-A 55/07, p. 1768, Jan 1995. [AAC 9432720]

Administrators and researchers expect math/science classes to be based on interdisciplinary and thematic hands-on problem solving activities involving process skills in a real world context, with use of state of the art calculators, computers, and other technology.

IC, **PS**, **Tech**, Calc, Comp, Curr **(MS)**

Liu, Qiduan. (1994). Effect of Seventh-Grade Mathematics Teachers' Mathematics Preparation on Student Performance in Relation to the Thinking Level of the Mathematics Tasks (University of South Carolina). DAI-A 55/11, p. 3478, May 1995. [AAC 9508138]

Similar performance by students taught by secondary-prepared and elementary/out-of-field teachers on lower-level thinking math problems; better performance when taught by secondary-prepared teachers on high-level thinking math problems.

TKnw, **Tchr**, Curr, Ach **(MS & TE)**

Lockwood, Susan L. (1995). Semesterizing the High School Schedule:The Impact on Student Achievement in Algebra and Geometry in Dothan City Schools, Dothan, Alabama (The University of Alabama). DAI-A 56/06, p. 2063, Dec 1995. [AAC 9534244]

No significant difference in achievement between block and traditional six-period schedule in algebra or geometry. No significant difference in achievement for racial, gender, or ability groups (n=663). **Ach**, **Alg**, **Geom**, Curr, Gend, Ethn **(HS)**

Loggins, Wanda Harrison. (1994). Enhancing Student Acquistion of Functions Via Connections, Modeling and Technology (Georgia State University). DAI-A 55/10, p. 3126, Apr 1995. [AAC 9507426]

Significant differences between experimental and control groups (5 classes Honors Algebra II) on concept image of function, ability to make connections, and to exhibit modeling skills. Possible long-term effects for making connections. **Alg**, **Comp**, **Rep**, Att, Patt, Lrng **(SE)**

Long, Gary Lamour. (1994). The Development and Testing of an Instrument to Measure Teachers' Attitudes Toward Their Use of Computers in Mathematics Instruction (The University of Tennessee). DAI-A 56/04, p. 1281, Oct 1995. [AAC 9527230]

Internal consistency reliability estimated at 0.90 for the scale and 0.74 to 0.93 for the subscales. Teachers with more positive attitudes toward computers use them more. Teachers more knowledgeable and experienced with computers use them in instruction more (n=23).

Comp, **TAtt**, Tchg, Assm **(SE & TE)**

Longo, Paul James. (1993). National Mathematics Standards and Communicative Competence: A Sociolinguistic Analysis of Institutionalized and Emergent Forms of Classroom Discourse (The American University). DAI-A 55/11, p. 3440, May 1995. [AAC 9505894]

Identified separate institutionalized and emergent forms of discourse corresponding to behaviorist and constructivist approaches. Each form requires distinct communicative competencies teachers/students need to know to successfully implement Standards.

Curr, **Oral**, **Clln**, Lrng, Tchg **(EC)**

Lyons, Claire. (1994). Conceptual Understanding of Subtraction Word Problems (Queen's University of Belfast). DAI-C 56/04, p. 814, Winter 1995. [Not available]

Results from Northern Irish 7-year-olds (n>22) partially supported Riley and others' model. Alternative model offered; understanding is thought to involve more than representational ability. Methodological, theoretical and educational implications discussed.

Lrng, A/S, PS (EC)

Mainville-Lanthier, Linda. (1993). Comparaison D'un Test Conventionnel Et D'une Simulation D'un Test Adaptatif Sur Ordinateur Chez Les Eleves D'habilete Faible En Mathematique (University Of Ottawa). MAI 33/02, p. 316, Apr 1995. Language:FRENCH. [AAC MM89636]

[Title in English: Comparison of a Conventional Test and a Simulation of an Adaptive Computerized Test on Low-Ability Mathematics Students]

Abstract not available.

Ach, Comp, Assm

Manouchehri, Azita. (1994). Computer-Based Explorations and Mathematical Thinking Processes of Preservice Elementary Teachers: Two Case Studies (University of Georgia). DAI-A 56/02, p. 484, Aug 1995. [AAC 9520837]

Explorations facilitated abstracting math relationships and patterns, making/testing conjectures about mathematical structures, and inductive generalizing. Subjects (n=2) experienced difficulty resolving cognitive conflict and needed guidance and approval from researcher.

Comp, Geom, Patt, PS (EL & TE)

Maple, Sue Ann. (1994). A Way of Life: Background and Experiences of Women Doctoral Students in Mathematics and Science (Indiana University). DAI-A 55/08, p. 2337, Feb 1995. [AAC 9500403]

Early academic achievement and parental support, particularly fathers, positively related interest and participation in math. May be particularly sensitive to support features in grad school. Cultural definitions of commitment may be incompatible with life roles.

Gend, Soc, Att, Ach, Curr **(PS)**

Maro, Rita Ainamensa. (1994). The Effect of Learning Mathematics in a Second Language on Reasoning Ability (The University of New Brunswick). MAI 33/06, p. 1647, Dec 1995. [AAC MM96997]

Performance in math reasoning ability better on Kiswahili version. English Test of Math Reasoning positively correlated with Logical Connectives. Significant differences due to intelligence, school level, language dominance, parents' job and first language(s).

Lang, PS, Comm, Soc, Ethn **(SE)**

Martin, Candace L. (1994). A Discriminant Study of Memories, Attitudes and Beliefs that Identify Individuals Who Report Feelings of Math Anxiety (Adler School of Professional Psychology). DAI-B 56/06, p. 3429, Dec 1995. [AAC 9535393]

Nineteen components successfully discriminate among 'math anxious', 'math neutral', and 'math confident' students (n=320). Two discriminant functions found to predict membership in each group at a 78.5% success rate overall.

Anx, Att, Blf, D/R, Assm **(PS)**

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Mather, Jeanne Ramirez Corpus. (1994). Student Perceptions in the Mathematics Classroom: A Study of How African-American, Hispanic, Native American, and White Fifth and Sixth Graders Perceive Mathematics and the Mathematics Classroom (The University of Oklahoma). DAI-A 55/09, p. 2753, Mar 1995. [AAC 9502478]

(n>1000) Minority and White perceptions of math, math ability, and teacher treatment basically same; significant differences in perceptions of role models, teacher practices, and educational/career goals; African-Americans differed most, Native Americans least.

Blf, Ethn, Meas (MS)

May, Charlotte Marie. (1994). Factors Affecting the Integration of Graphing Calculator Technology in the Secondary Precalculus Classroom: Attitudes, Teacher Training, and Curriculum Issues (The University of Texas at Austin). DAI-A 55/10, p. 3127, Apr 1995. [AAC 9506053]

Students' (n=46) use of graphing calculator changed significantly over time. Attitudes shifted from calculator for computing and verifying to tool for concept development and nonroutine problems. Students recommended restricted use of graphing calculator.

Cals, Att, GCal, Lang, Curr, PS **(HS)**

Mayers, Karen Scott. (1995). The Effects of Using the Saxon Algebra I Textbook on the Achievement of Ninth-Grade Algebra I Students from 1989-1993 (Delta State University). DAI-A 56/04, p. 1281, Oct 1995. [AAC 9528416]

Experimental group scored significantly higher than traditional group on the overall MSATA and on many specific sections (n=171). Study concludes that use of Saxon textbook does produce a higher level of achievement of basic Algebra I skills than a traditional textbook.

Ach, Alg, Curr (HS)

Mcarthur, Julia M. (1994). The Sequence of Formal Operational Structures Required for an Understanding of Probability (The University of Iowa). DAI-A 56/04, p. 1303, Oct 1995. [AAC 9524880]

Students (n=81) passed tasks in following order: combinatorial, proportionality, and probability. No significant difference between males and females tasks. No difference between task performance and grade level, except tenth grade worse on probability.

Prob, Lrng, DscM, RaPc, Gend, Ach **(HS)**

Mcgaughey, M. Carolyn Stewart. (1993). An Analysis of the Association Between Measures of Teacher Effectiveness and Student Performance (Texas Southern University). DAI-A 55/07, p. 1769, Jan 1995. [AAC 9433147]

Grade 9 teachers (n=20) who received high appraisal rating and classroom management/ organization; their students did significantly better in math. Male students with male teachers receiving high or average appraisal rating did significantly better in math than counterparts.

Alg, Ach, TAtt, Gend **(HS & TE)**

Mckenzie, William S. (1994). Dealing with Mathematics Difficulties in a Large Board of Education: A Descriptive Profile (University of Toronto). DAI-A 55/12, p. 3774, Jun 1995. [AAC NN92610]

Need is to reduce students requiring remediation in math, and when necessary, to provide conceptually appropriate remediation. Key to improvement of teaching and remediation of mathematics is teacher training. Majority of teachers had positive view of mathematics.

D/R, Curr, Tchg, LD, Isrv **(K-12 & TE)**

Mcnatt, Rodney Erwin. (1994). A Descriptive Analysis of Students' Mathematics Discourse in Cooperative Group and Whole Class Discussion (University of Delaware). DAI-A 56/01, p. *127, Jul 1995. [AAC 9516332]*

Students (n=18) participating in a four-week summer enrichment program. Results support reducing the emphasis on formal mathematical language and suggest that more emphasis needs to be placed on the sociocultural aspects of discourse appropriation.

Oral, Grpg, Soc, Lang (ALL)

Meshea, Maureen. (1994). A Comparison of Mathematics Courses and Achievement of Male and Female Students and How They Affect the Students' Rewards in the Labor Market (The American University). DAI-A 55/11, p. 3440, May 1995. [AAC 9507838]

Significant relationship between female students' high school and college math participation and achievement, college program, occupation and career choice and income earned (n=28,000). Performance of females consistently lagged behind males in most areas.

Curr, Ach, Gend (HS & PS)

Mireles, Hilda Nellie. (1995). The Cognitive and Attitudinal Effects of a Precollege Intervention Program for Enhancement in Science, Mathematics, and Engineering (The University of Texas at Austin). DAI-A 56/06, p. 2187, Dec 1995. [AAC 9534896]

Participants performed better than non-participant academic peers. No significant differences observed between groups on attitude toward science, math, and engineering careers; no attitude difference detected according to self-reported English-Spanish bilinguality.

Att, Lrng, IC, Lang (HS)

Mixon, Betty Stevenson. (1994). Attitudes Toward Mathematics of Eighth-Grade Middle School Students Enrolled in a Magnet Program (Christopher Newport University). MAI 33/06, p. 1647, Dec 1995. [AAC 1374642]

Changes in attitudes toward math in students both enrolled and not enrolled in magnet school. Changes in magnet students' attitudes suggest such a program can have a positive effect on attitudes for different ethnic groups. **Att, Curr, Ethn (MS)**

Mohamad-Ali, Bin Hassan. (1995). Attitudes Towards Mathematics of Secondary School Students in Malaysia: Current Status, Development, and Some Relationships to Achievement (Indiana University). DAI-A 56/06, p. 2157, Dec 1995. [AAC 9531482]

Students (n=528) attributed success more to effort than ability and failure more to lack of effort than lack of ability. Females scored significantly higher on all scales except confidence. Strongest predictor of achievement for males and females was confidence.

Ach, Att, Gend, Ethn (HS)

Mokatrin, Saleem Mohammed. (1994). Mathematics Achievement at the Sixth-Grade in Israel (The American University). DAI-A 56/02, p. 484, Aug 1995. [AAC 9522587]

Overall, significant difference between Arab and Jewish students' (n=400) mean scores on math achievement test. No significant difference in scores by gender. Overall, immigrants performed better than students born in Israel. **Ethn, Ach, Soc, CC, Gend (MS)**

Montes, Jane Ann. (1994). Beyond Computation in Mathematics: An Instructional Study with Third-Grade Bilingual Mexican American Students (University of Illinois at Urbana-Champaign). DAI-A 55/09, p. 2747, Mar 1995. [AAC 9503274]

Among findings were importance of using native-language instruction for developing word problem-solving concepts in English as second language and creating learning environments in which students can learn from their mistakes. **Ethn, Lang, PS, Comm (EC)**

Moore, Deborah Ann. (1995). A Study of Metacognitive Strategies and Organizing Tactics in Precalculus Mathematics (The University of Oklahoma). DAI-A 56/05, p. 1697, Nov 1995. [AAC 9530073]

Students' (n=205) perceived study time compared to others was significantly different with respect to treatment and its interaction with aptitude. Students' perceived difficulty of math was significantly different with respect to treatment and its interaction with gender.

Mtcg, Blf, Cals, Ach, Gend (PS)

Morales, Romelia Vizcarra. (1994). Comprehension and Solution Patterns of Simple Addition and Subtraction Math Word Problems Among Mexican American Bilingual Elementary School Students (University of California, Santa Barbara). DAI-A 55/10, p. 3116, Apr 1995. [AAC 9507778]

High LEP scores significantly higher than Low LEP scores in both languages (n=119). Students comprehending problems had accurate solutions; others showed evidence of systematic, but incorrect reasoning in manipulating assignments of quantity.

A/S, Ethn, Lang, PS, Comm (EL)

Morris, Bonnie Eilene. (1995). Mathematics Placement at a Community College (Grand Valley State University). MAI 33/06, p. 1635, Dec 1995. [AAC 1361949]

Assimilates current best knowledge of qualities required of a college mathematics placement test. Addresses calculating difficulty and discrimination indexes, validating and setting cut scores, and evaluating test validity and effectiveness, and current effects of reform.

D/R, Assm, Curr (PS)

Muehlman, John M. (1994). Maharishi's Vedic Mathematics at the Elementary Level: Improving Achievement, Affect, and Mental Mathematics Through Vedic Sutra Based Computation (Maharishi International University). DAI-A 55/07, p. 1861, Jan 1995. [AAC 9431798]

Indications that, for third graders, Vodka multiplication resulted in significantly higher achievement scores, better retention, more mental mathematics, and greater overall enjoyment than standard approach. Vodka Check method significantly better. **Ach, M/D, Curr, Att (EC)**

Mullinix, Bonnie Blythe. (1995). Exploring What Counts:Mathematics Instruction in Adult Basic Education (University of Massachusetts). DAI-A 56/03, p. 796, Sep 1995. [AAC 9524731]

General lack of support for math instruction. Need flexible staff development and curriculum support (n=15 programs). Instructor/learner have initial math anxiety; more self-confidence is triggered by mastering math activities. **D/R, Curr, Tchg, Isrv, TAnx, Anx (PS & TE)**

Muntersbjorn, Madeline Mary. (1994). Algebraic Reasoning and Representation in Seventeenth Century Mathematics:Fermat and the Treatise on Quadrature C. 1657 (University of Pittsburgh). DAI-A 56/04, p. 1503, Oct 1995. [AAC 9526672]

Lays foundation for argument against common philosophical assumption of representation neutrality and that developing a good representational strategy is a philosophically significant feature of mathematical reasoning. **PS, Phil, Lrng (ALL)**

Mutimo, Marie Grace. (1994). Looking Beyond the Answer: Strategies Used by Fifth Graders to Solve Mathematical Word Problems (Fordham University). DAI-A 55/11, p. 3440, May 1995. [AAC 9511240]

Analysis of above-average fifth graders' (n=10) math problem solving strategies included formation of these hypotheses. Students use variety of strategies, monitor and assess their progress, perceive problem difficulty differently, and prefer collaboration. **PS, Lrng (MS)**

Nath, Janice Lynn Mitchell. (1995). Expert/Novice Differences in Teaching with Calculators (University of Houston). DAI-A 56/05, p. 1647, Nov 1995. [AAC 9528797]

Found a significant difference between novices and experienced teachers (n=28) on (a) teachers' instructional activities, (b) set induction, (c) above the skill/knowledge level, (d) classroom environment. Many qualitative differences were also found.

Calc, Tchg, CIIn, D/R (MS)

Nguyen, Mai-Phuong Thi. (1994). A Surveys and Data Analysis Unit for Middle School Students with Emphasis on Conceptual Development and Group Projects (San Jose State University). MAI 33/02, p. 551, Apr 1995. [AAC 1359040]

Field testing of 23-lessons unit in seventh grade class revealed students developed important statistics skills and exposed to positive math learning experiences. Some students showed low level of conceptual understanding of mean, mode, and median.

Stat, Assm, Curr, Lrng (MS)

Nicholas, Sacra Nevaire. (1994). An Investigation of Teacher Education Four Mathematics Teachers Reflect on Education (The University of Oklahoma). DAI-A 55/08, p. 2312, Feb 1995. [AAC 9501171]

Of five reflective strategies, Researcher Observation Feedback was perceived to be the most helpful by three teachers followed by Video Tapes and then Audio Tapes (n=4). One teacher found Personal Journals to be most beneficial. **Mtcg, Comm, Writ, Oral (MS & TE)**

Nicol, Marsha Lynn Paulus. (1995). Examining the Changing Beliefs of a High School Physics Teacher Integrating Mathematics Through Technology A Case Study (The Ohio State University). DAI-A 56/06, p. 2158, Dec 1995. [AAC 9534039]

Teacher (n=1) integrated graphing calculator and Calculator-Based Laboratory in class; contributing to teacher's change of beliefs: peer interaction, mentoring, extensive professional development program, and reflection. Teacher changed instructional practice.

Tech, GCal, TBlf, Patt, Curr, Mtcg (HS & TE)

Niederhauser, Dale Sherman. (1994). The Role of Computer-Assisted Instruction in Supporting Fifth-Grade Mathematics Instruction: Cognitive and Attitudinal Outcomes (The University of Utah). DAI-A 56/01, p. 168, Jul 1995. [AAC 9514453]

All students (n=127) had math gains. HyperMath group had greater gains on SAT Concept of Number and Mathematics Computation than Integrated Learning System or Logo groups. No change in attitudes for all students. **Att, Comp, Ach, Lrng (MS)**

Niemi, David Michael. (1994). Assessing Fifth-Grade Students' Fraction Understanding: A Conceptual Field Method for Fusing Assessment and Instruction (University of California, Los Angeles). DAI-A 55/10, p. 3127, Apr 1995. [AAC 9507350]

Students (n=22 classes) receiving explicit instruction on measurement applications of fractions, related fraction principles, and the number line, expressed more principled understanding, and fewer misconceptions, on a variety of assessments. **Frac, Assm, Tchg, Lrng (MS)**

Norris, Carl Wallace. (1994). The Impact of Using Graphic Calculators as an Aid for the Teaching and Learning of Precalculus in a University Setting (Michigan State University). DAI-A 55/07, p. 1862, Jan 1995. [AAC 9431301]

No significant difference in algebraic skills (n=304). Treatment group significantly better on basic function concepts and graphing. No significant differences in attitude towards math. Strong support from student and faculty for graphing calculator as a visual aid.

GCal, Alg, Ach, Att, Cals (PS)

O'brien, Marcia Joan. (1995). Changing a School Mathematics Program: A Ten Year Study (Rutgers The State University of New Jersey - New Brunswick). DAI-A 56/03, p. 855, Sep 1995. [AAC 9524593]

Study involved teachers and administrators (n=14); teachers reported their original resistance to project was inevitable. Most important factor in promoting change was support from on-site consultant working closely with them to develop, implement, and assess lessons.

Curr, Lrng, Isrv (EL & TE)

O'brien, Teresa Helen. (1993). The Effects of Cooperative Learning Versus Lecture on the Attitudes, Achievement, and Attrition Rates of College Algebra Students (University of Arkansas). DAI-A 55/08, p. 2296, Feb 1995. [AAC 9434933]

No significant differences between cooperative learning and lecture-discussion sections in student attitudes, achievement, or attrition (n=90). **Grpg, Att, Alg, Ach (PS)**

O'callaghan, Brian Richard. (1994). The Effects of Computer-Intensive Algebra on Students' Understanding of the Function Concept (The Louisiana State University and Agricultural And Mechanical Col.). DAI-A 55/11, p. 3440, May 1995. [AAC 9508593]

Results indicated CIA students achieved better overall understanding of functions. No significant differences found for reifying. CIA students showed significant improvements in attitudes and anxiety toward math, and higher percentage successfully completed course.

Comp, Alg, Curr, Anx, Att, Lrng (PS)

Olsen, James R. (1994). The Effect of the Use of Number Lines Representations on Student Understanding of Basic Function Concepts (University of Northern Colorado). DAI-A 55/09, p. 2753, Mar 1995. [AAC 9503723]

Dynamic number lines, plus worksheets, enhanced eighth graders' (n=74) ability to interpret pointwise and global features of graphs, but not understanding of definition of function, use of letters in function notation, and relationship between formula and graph.

Alg, Comp, Geom (MS)

Oster, Joyce Elizabeth. (1994). Graphics Technology and Calculus Readiness:The Effects of Instruction Using a Programmable Scientific Graphing Calculator on Conceptual and Procedural Understanding in Precalculus (Florida Institute of Technology). DAI-A 55/11, p. 3466, May 1995. [AAC 9509242]

Significant increase in students' (n=98) conceptual knowledge. Significant effect on students' conceptual knowledge of precalculus math keeping pace with their procedural knowledge of precalculus math. No significant effect on procedural or overall achievement.

GCal, Lrng, Cals, Tchr, Att, TAtt **(PS)**

Padgett, Ervin Eugene, III. (1994). Calculus I with a Laboratory Component (Baylor University). DAI-A 55/09, p. 2754, Mar 1995. [AAC 9503053]

Computer laboratory used Maple math software. Students in traditional section performed significantly better on final examination. In topics presented directly in laboratory, experimental students performed slightly better. **Cals, Ach, Comp (PS)**

Pagnucco, Lyle Anthony. (1994). Mathematics Teaching and Learning Processes in Problem-Oriented Classrooms (University of Georgia). DAI-A 55/10, p. 3127, Apr 1995. [AAC 9507234]

Adoption of a problematic approach to mathematics was slow. Teachers' (n=3) construction of mathematics was more creative, even in most structured lesson. A problematic approach became a sense making scheme for pedagogy and technology.

Tech, Tchg, Lrng, PS, Istv **(SE & TE)**

Pajares, Manuel Francisco. (1993). Mathematics Self-Efficacy as a Mediating Mechanism on Mathematics Problem-Solving Performance: A Path Analysis (University of Florida). DAI-A 55/10, p. 3142, Apr 1995. [AAC 9505626]

Perceived self- efficacy to solve math problems more predictive of capability to solve those problems than math self-concept, math anxiety, math outcome expectations, prior math experience, or gender and mediated effect of these variables on performance (n=350).

Blf, PS, Ach, Anx, Gend, Aff **(PS)**

Pandiscio, Eric Anthony. (1994). Spatial Visualization and Mathematics Achievement: A Correlational Study Between Mental Rotation of Objects and Geometric Problems (The University of Texas at Austin). DAI-A 55/10, p. 3142, Apr 1995. [AAC 9506073]

Mental rotation of objects significantly correlated with calculation of surface area and volume at $r = .23$ for all students, and at $r = .31$ for females. Results did not support hypothesis that spatial ability is strong predictor of achievement in geometry. **Geom, Ach, Vis,** Gend **(HS)**

Pankow, Cheryl Kay. (1994). The Effects of College Student Use of Graphics Calculators on the Learning of Algebraic Concepts (The University of North Dakota). DAI-A 55/12, p. 3774, Jun 1995. [AAC 9511388]

No significant differences on posttest (n=72). Treatment scores significantly higher on first/second units. Control higher in two concept areas, treatment higher in four. 82% of treatment responders felt graphing calculator had a favorable effect, 20% for control's calculators.

Alg, GCal, Ach, Blf **(PS)**

Parker, Melanie S. (1994). Instruction in Percent: Moving Prospective Teachers Under Procedures and Beyond Conversions (University of Pittsburgh). DAI-A 55/10, p. 3127, Apr 1995. [AAC 9507389]

Instruction emphasizing language and representation superior to non-emphasis instruction. High and low ability subjects (n=70) outperformed control counterparts on percent problem solving. Experimental subjects better able to interpret use of percent in context.

RaPc, PS, Ach, Lrng, Prsv **(EL & TE)**

Paschal, Sarah Garrison. (1994). Effects of a Visualization-Enhanced Course in College Algebra Using Graphing Calculators and Video Tapes (Georgia State University). DAI-A 55/09, p. 2754, Mar 1995. [AAC 9502845]

Treatment students successful learning new technology without sacrificing mastery of math skills and were better problem solvers. Students using graphing technology and video tapes more proficient interpreting real world graphs and had higher opinion of technology.

Tech, Alg, GCal, Ach, PS, Att **(PS)**

Patterson, Frankie Lastrap. (1993). The Effects of Study Skills Instruction on the Academic Performance of Developmental Mathematics Students in an Urban University (Texas Southern University). DAI-A 55/12, p. 3715, Jun 1995. [AAC 9511762]

Variable study skills instructions did produce significant effect on math scores of freshmen responsible developmental students (n=177). Ethnicity produced a significant effect on their attitudes regarding math. **Ach, Assm, D/R**, Ethn, Att **(PS)**

Pennett, Helene Deborah-Lynn. (1994). Characteristic Memory Functions in Subtypes of Arithmetic Disabled Children (University of North Texas). DAI-A 55/10, p. 3142, Apr 1995. [AAC 9505543]

Children (n=62) put into disability groups:arithmetic, arithmetic/spelling, and arithmetic/spelling/reading. Meaningfulness of stimuli (verbal or visual) impacts memory for all groups. Visual memory may not be prominent feature of arithmetic disabilities.

Ach, LD, Comm, Lrng **(EL)**

Penta, Mary Q. (1994). A Comparison of the Effectiveness of Three Commonly Used Scoring Methods for Prioritizing Areas of Need (The University of North Carolina at Greensboro). DAI-A 55/09, p. 2754, Mar 1995. [AAC 9502691]

Three methods deemed comparable in educational setting. However, the Del-N is method of choice when strict prioritization of need is desired by needs assessors or needs assessment clients (n=339). **Assm, D/R (K-12)**

Pepin, Rejean. (1994). Evaluation De La Comprehension Du Cercle Et De Son Equation Chez Des Eleves Ontariens Du Niveau Secondaire En Immersion Francaise (Universite Laval). DAI-A 55/11, p. 3441, May 1995 Language:FRENCH. [AAC NN92044] [Title in English: Evaluation of Comprehension of the Circle and its Equation Among Ontarian Students in Secondary Level French Immersion Instruction]

Comparison of concept of circle between 12th-year students in an English-speaking program and 12th-year students in French immersion program showed that study of math in French did not seem to interfere with development of the concept.

Lang, Geom, Lrng, Comm **(HS)**

Perry, Wendell. (1995). An Assessment of the Attitudes and Anxieties of the African American Students Who were Enrolled in Developmental Mathematics Ii Classes at Halifax Community College (Virginia Polytechnic Institute and State University). DAI-A 56/03, p. 855, Sep 1995. [AAC 9524796]

Overall attitudes toward learning math were positive and math anxieties not prevalent among African-American students. No significant differences between math anxieties or attitudes toward learning math of African-American and non African-American students.

Ethn, Att, Anx, D/R **(PS)**

Piazza, Jenny Ann. (1994). An Inquiry into the Mathematics Culture of a Primary Constructivist Classroom: An Ethnographic Description (Oklahoma State University). DAI-A 55/11, p. 3403, May 1995. [AAC 9508644]

A constructivist culture was found to be constructed as meaningful to the construction of knowledge. The educational goal of autonomy created cultural meanings for schooling experiences. **Lrng, Comm, Clln, Tchg (EC)**

Pimm, David John. (1994). Some Interrelations Between Language and Mathematics (Open University). DAI-C 56/03, p. 561, Fall 1995. [Not available]

Offers an amalgam of detailed analytic study of linguistic aspects of particular math classrooms and more theoretical, descriptive accounts of aspects of math of a general psychosocial and broadly philosophical (rather than meta-mathematical) nature.

Lang, Oral, Clln, Soc, Writ, Prob **(ALL)**

Plemons, Marie Annette Stern. (1995). The Effect of Number Sense Instruction on Prekindergarten Children's Understanding of the Mathematics Concept of More or Less (University of Houston). DAI-A 56/05, p. 1655, Nov 1995. [AAC 9528800]

Found significant differences between number sense instruction and unguided exploration, and between direct instruction and unguided exploration; no significant difference between number sense and direct instructions in prekindergarteners (n=87). No significant gender effects found. **NSns, Lrng, Tchg**, Gend **(EC)**

Poirier, Claude Andre. (1994). Design, Development, Production and Evaluation of a Computer-Based Multimedia Application to teach Number Concepts to Intellectually Disabled Children (Concordia University). MAI 33/02, p. 333, Apr 1995. [AAC MM90877]

Multimedia Numbers developed to teach number concepts to intellectually disabled children. Considerations in researching authoring software, selecting appropriate computer platform, and distribution possibilities of a finished product are discussed.

LD, Comp, NSns, Assm, Lang, Oral **(EL)**

Porzio, Donald Timmis. (1994). The Effects of Differing Technological Approaches to Calculus on Students' Use and Understanding of Multiple Representations when Solving Problems (The Ohio State University). DAI-A 55/10, p. 3128, Apr 1995. [AAC 9505274]

Calculus & Mathematica students better able to use different forms of representations and make connections between representations than graphics calculator or traditional students. Little difference between latter groups. (N=36). **Comp, PS, Cals**, GCal, Tchg, Lrng **(PS)**

Price, Patricia Rea. (1994). The Status of Remedial Mathematics in Southern Regional Education Board (The University of Mississippi). DAI-A 55/11, p. 3428, May 1995. [AAC 9509528]

When math department chairpersons (n=158) oppose offering remedial courses, quality of programs must be questioned; cooperative learning successfully used; many remedial programs don't provide sufficient mastery of math for large number of students.

D/R, Curr, Tchg, TBlf, Comp **(PS)**

Pruett, Janis Diane Aveyard. (1994). The Relationship of Gender Bias to Mathematics and Science Achievement (Grambling State University). DAI-A 55/07, p. 1862, Jan 1995. [AAC 9431790]

NAEP data indicated a weak relationship between gender and analytical curriculum. Females scored lower than males on math achievement and much lower on science achievement. Math achievement had moderately strong negative impact on science achievement.

Gend, Soc, Ach, Curr, Assm **(HS)**

Prupas, Lorne. (1993). Students' Episodic Memories for Events in Grade 6 Motion Geometry Lessons (Simon Fraser University). DAI-A 55/10, p. 3142, Apr 1995. [AAC NN91325]

Personally relevant learning events can be identified. Small, positive correlations exist between self-report of metacognitive self-regulation and memory reports. During difficult lessons, metacognitively active students more likely to report episodic memories. (n=122)

Geom, Mtcg, Lrng, Ach **(MS)**

Puig, Luis. (1993). Elements for Mathematical Problem-Solving Instruction [Elementos Para La Instruccion En Resolucion De Problemas De Matematicas] (Universitat De Valencia). DAI-C 56/04, p. 814, Winter 1995. Language:SPANISH. [Not available]

Elaborates on model of cognitive processes, and re-elaborates on competence model. Main change after instruction is change in style and not an increase in efficiency (n=35).

PS, Tchg, Lrng, Patt **(Not given)**

Purdy, Thomas Lamonde. (1994). Reforming Mathematics Education:Perspectives from the Communities of Business, Education, and Parents as Developed in the Process of Designing Authentic Mathematical Activities (Rutgers The State University of New Jersey - New Brunswick). DAI-A 55/12, p. 3774, Jun 1995. [AAC 9514124]

Participants (n=26) came with varying views of nature of math. Conversations often focused on nature of math. Majority indicated that they had moved toward more common understanding of math and made need for change in math education more clear.

Curr, Soc, Prob (K-12)

Rackley, Linda Jeanne Earnest. (1994). Differences Between Teachers Who Use a Mathematics Textbook More than Fifty Percent of the Time and Teachers Who Use a Mathematics Textbook Less than Fifty Percent of the Time (San Jose State University). MAI 33/02, p. 316, Apr 1995. [AAC 1359047]

Based on extensive structured interviews, study highlights differences in beliefs, attitudes, and professional development between the two groups.

Tchg, Curr, TBlf, TAtt **(K-12 & TE)**

Reinke, Kathryn Skipper. (1995). Preservice Elementary Teachers' Attitudes Toward Procedural and Conceptual Geometry Problems (Texas A&M University). DAI-A 56/06, p. 2158, Dec 1995. [AAC 9534417]

Conceptual problems were more confusing and required more original thinking but more useful to preservice teachers (n=91). Procedural problems produced more confidence about solutions.

Geom, Lrng, TAtt, Blf **(EL & TE)**

Renne, Christine G. (1994). Making Mathematics Count: Academic and Social Relations in Mathematics Lessons in Elementary Classrooms (University of California, Riverside). DAI-A 55/08, p. 2275, Feb 1995. [AAC 9501913]

Examines mathematics taught in classrooms at magnet school for math, science, and technology and at a traditional school (n=4), work that fourth-grade students and teachers contribute to mathematics construction, and its relationship to the mathematics prescribed by documents and social mores. **Curr, Soc, Lrng,** Comm **(EC)**

Rentschler, Robert Vincent, Jr. (1994). The Effects of Saxon's Incremental Review on Computational Skills and Problem-Solving Achievement of Sixth-Grade Students (Walden University). DAI-A 56/02, p. 484, Aug 1995. [AAC 9518017]

Study involved students (n=209) in adjacent rural counties in West Virginia. Significantly higher in computation skills for experimental group. No significant difference in concepts and applications scores. **Curr, Ach, Lrng,** PS **(MS)**

Rhine, Steven Michael. (1994). Students' Language Proficiency Effects upon Teachers' Assessment of Students' Mathematical Understanding (University of California, Los Angeles). DAI-A 55/11, p. 3480, May 1995. [AAC 9510338]

Teachers had less opportunity to assess LEP students' understanding because they asked more unanswered questions of LEP students, non-LEPs used manipulatives more, and LEP students spoke less elaborated sentences. Reflecting on videotape helped teachers.

Lang, Assm, Mtcg, Ach, Frac, Lrng **(EL & TE)**

Rice, James William. (1994). Effective Methods used by Educators to Involve Parents in Homework Math Packets with Their Children (Arizona State University). DAI-A 55/12, p. 3705, Jun 1995. [AAC 9513866]

Students completing more of homework packets received higher scores on posttests. Motivational differences for participation between the parents of male and female students noted. Teacher most important factor in school/home communication link.

Soc, Tchg, Ach, Gend, Comm **(Not given)**

Rice, Jennifer Ann King. (1995). The Effects of Systemic Transitions from Middle to High School Levels of Education on Student Performance in Mathematics and Science:A Longitudinal Education Production Function Analysis (Cornell University). DAI-A 55/12, p. 3706, Jun 1995. [AAC 9511946]

Study found that students' transition from the middle to high school has a negative impact on achievement in mathematics and science; students from more stable and supportive home environments tend to evidence less academic difficulty. **Ach, Soc,** Assm **(SE)**

Riordan, Jeanann. (1994). Effect of Persistence Time on Learner Achievement (Syracuse University). DAI-A 56/03, p. 855, Sep 1995. [AAC 9522553]

Persistence time ratio improved within same group over two sequential math lessons when time was unrestricted for both lessons. Persistence time ratio on second lesson better for group given unlimited time on first lesson than for group limited in time. **Ach, Tchg (Not given)**

Roberson, Janys Ann. (1994). An Analysis of the Mathematics Achievement of Afro-American and Euro-American Females in Grades 3, 4 and 5 Before and After the Application of Nontraditional Mathematics Instruction (Michigan State University). DAI-A 56/04, p. 1233, Oct 1995. [AAC 9524994]

Slight, significant difference in mean math scores. Interviewees (n=12): Afro-Americans did not like math, found it difficult and impractical, and tended to avoid it; Euro-Americans liked math, thought it was important, and denied their low achievement.

Gend, Ach, Ethn, Blf, Att, Tchg **(EL)**

Roberts, Charles Henry. (1994). Academic Development and Performance Enhancement Among Minority Students Enrolled in Mathematics and Science Based Curriculum Programs at Post-Secondary Institutions (Michigan State University). DAI-A 56/03, p. 788, Sep 1995. [AAC 9524995]

Minority students must carefully manage time and develop sound study strategies. Initial encounters and subsequent experiences with university staff and personnel and their initial academic performance were crucial factors in subsequent success or failure.

Ethn, Ach, Curr **(PS)**

Rolfs, Teresa Kay. (1994). Self-Reflection on the Transition of an Elementary School Teacher to Middle School and the Adaptation of Cooperative Learning to a Seventh Grade Basic Math Class (University of Kansas). DAI-A 55/09, p. 2703, Mar 1995. [AAC 9504055]

Teacher hampered in attempts to introduce cooperative learning because of unfamiliarity with idiosyncrasies of pre-adolescents and routines of middle school. No evidence that cooperative learning increased student achievement in Basic Mathematics.

Isrv, Ach, Grpg, TKnw **(MS & TE)**

Ross, Susan Renee Culipher. (1994). The Effects of Manipulative Use on Preservice Elementary Teachers' Conceptual Knowledge of Division (University of Georgia). DAI-A 55/09, p. 2754, Mar 1995. [AAC 9504435]

Manipulatives were not influential in development of knowledge for a student conceptually stronger nor for a student procedurally stronger. Two students with moderate to low conceptual and procedural knowledge made extensive progress (n=4).

Manp, M/D, Lrng, Prsv **(EL & TE)**

Royo, Maria Pilar. (1994). Cai Lesson in Geometry (California State University, Dominguez Hills). MAI 33/04, p. 1043, Aug 1995. [AAC 1361265]

CAI lesson (n=30) in the topic of area of rectangles. Significant improvement in the scores was observed.

Geom, CAI, Ach **(MS)**

Rupp, Mary Ann Herron. (1994). The Impact of Mild Conductive Hearing Loss on School Children's Achievement at Grades 4, 5, and 6 (Kansas State University). DAI-A 55/09, p. 2777, Mar 1995. [AAC 9502777]

A history of mild hearing loss (n=42) is not associated with problems in math.

Ach, LD (EL)

Ryan, Mary Gene. (1994). The Effects of Computer-Assisted Instruction on At-Risk Technical College Students (University of South Carolina). DAI-A 56/01, p. 78, Jul 1995. [AAC 9517308]

(n=175) Students under 25 performed better than 25-and-over in computer-assisted format. Minorities performed better in computer-assisted format than in traditional. Middle/high SES performed better in computer-assisted format than low SES.

CAI, Ethn, Soc, Alg, Ach, Tchg **(PS)**

Sachs, Leroy. (1994). Math Anxiety Among Elementary Education Students in a Mathematics Methods Course (Saint Louis University). DAI-A 55/09, p. 2755, Mar 1995. [AAC 9502999]

One third had high, one third moderate, and one third little or no anxiety (n=19). Parental/peer attitude and attitude toward math usefulness had no influence on anxiety. No gender difference. Most with high anxiety blamed teachers and were low in confidence.

Anx, Soc, Att, Gend, Grpg **(EL & TE)**

Sadatmand, Kamal Dean. (1995). The Effect of Computer-Assisted Instruction on Algebraic Problem-Solving Abilities of Community College Students (United States International University). DAI-A 56/03, p. 804, Sep 1995. [AAC 9522302]

De Anza College software model was used with students (n=95) in Elementary and Intermediate Algebra courses. Statistical evidence indicated CAI can enhance a student's growth in mathematics and that it is possible to improve students' problem solving capabilities.

Alg, PS, CAI, Ach **(PS)**

Saleh, Umaru Alhaji. (1994). Motivational Orientation and Understanding of Limits and Continuity of First Year Calculus Students (The University of Oklahoma). DAI-A 56/01, p. 127, Jul 1995. [AAC 9517497]

Motivational orientation significantly affects understanding of limits and continuity. Task-oriented performed better than ego-oriented students. Gender does not significantly affect understanding. Positive correlation between perceived ability and understanding.

Cals, Gend, Aff, Ach, Blf **(PS)**

Sanchez, Lorlann Willis. (1994). Influence of Achievement Motivation and Prior Mathematics Achievement on Locus of Control and Mathematics Performance as Impacted Through Written Instructions (University of Hawaii). DAI-A 55/11, p. 3457, May 1995. [AAC 9506231]

'Need for achievement' significantly influenced locus of control. Prior math achievement and 'need for achievement' significantly influenced math performance. Written instruction did not impact students' (n=328) belief in ability or actual performance.

Ach, Aff, Wrt, Alg, Geom **(HS)**

Sanders, Michael D. (1994). A Case Study of the Pilot of a High School Applied Mathematics Program (Georgia State University). DAI-A 56/03, p. 856, Sep 1995. [AAC 9524233]

Two-year Applied Mathematics students in constructivist environment scored higher than one-year algebra I students on 10 of 14 algebra competencies. Applied Mathematics students more positive about math. Both groups (n=34) received low ratings on writing samples.

Alg, Lrng, Att, Writ **(HS)**

Santiago-Collazo, Daisy. (1995). The Effects of the Use of a Logo Computer Experience on Geometry Problem-Solving for Hispanic Limited English Proficient Migrant Elementary Students (The Pennsylvania State University). DAI-A 56/05, p. 1649, Nov 1995. [AAC 9532017]

At a Migrant Summer Camp, students (n=30) in the Logo group improved their geometry problem solving skills and improved their overall attitude toward mathematics more than the conventionally taught group. **Comp, Geom, PS**, Att, Ethn **(EL)**

Schloemer, Cathy G. (1994). Integrating Problem Posing into Instruction in Advanced Algebra: Feasibility and Outcomes (University of Pittsburgh). DAI-A 56/01, p. 127, Jul 1995. [AAC 9521420]

Incorporation of problem posing into instruction in Algebra 2 had no negative effects on student achievement but it was associated with negative affect on the part of students who had been successful with instruction not involving problem posing.

Alg, **Ach**, **CIIn**, Plan, Aff **(HS)**

Schnaithman-Vincent, Paula Jean. (1994). A Comparison of Gender Differences in Act Assessment Scores of Similarly Situated Male and Female Examinees. (The University of Iowa). DAI-A 56/04, p. 1204, Oct 1995. [AAC 9525212]

Students (n=9,735) matched by many variables, including course taking for algebra, geometry, trigonometry, calculus, and some sciences. Differences in achievement between males and females relate more to situation and cultural/social influences than gender.

Soc, **Ach**, **Gend**, Cals, Alg, Geom **(HS)**

Schneider, Ellen Marie. (1995). Testing the Rule of Three: A Formative Evaluation of the Harvard Based Calculus Consortium Curriculum (The University of Texas at Austin). DAI-A 56/06, p. 2158, Dec 1995. [AAC 9534951]

Curriculum implemented as intended, except students did not read textbook as anticipated and numerical exploring received less attention. Students performed higher on graphical measures, no significant difference in performance on conceptual or procedural measures.

Cals, **Curr**, **Lang**, Ach, Lrng **(PS)**

Schrier, Deborah Maureen. (1994). The Development of Young Children's Geometry Thinking in a Mediated Kindergarten Classroom Environment (State University of New York at Buffalo). DAI-A 55/11, p. 3407, May 1995. [AAC 9509157]

Children (n=38) in treatment sessions showed significant increase in cognitive test performance on the Coloured Progressive Matrices test, visual thinking skills, and geometry concept understanding. **Geom**, **Lrng**, **Vis** **(EC)**

Scott, Beverly Ann. (1994). The Effect of Graphing Calculators in Algebra II Classrooms: A Study Comparing Achievement, Attitude, and Confidence. (University of North Texas). DAI-A 55/09, p. 2755, Mar 1995. [AAC 9503954]

No significant difference in achievement (n=170). Highly significant differences between experimental and control groups in attitude and confidence in learning math (differences not explicitly given in abstract). **Alg**, **GCal**, **Ach**, Aff, Att **(HS)**

Segars, James Edward. (1994). Selected Factors Associated with Eighth-Grade Mathematics Achievement (Mississippi State University). DAI-A 56/03, p. 789, Sep 1995. [AAC 9520906]

Students (n=110) taught using traditional approach (Riverside Mathematics Program) scored significantly higher than students (n=99) taught using incremental, continuous-review approach (Saxon Mathematics Program). No gender differences. **Ach**, **Curr**, Gend **(MS)**

Selisky, John Matthew. (1994). The Infinity Concept: Development of Curricular Material for Junior High School Mathematics (Columbia University Teachers College). DAI-A 55/11, p. 3441, May 1995. [AAC 9511071]

Lesson topics included: fractions/integers and number line, primes, composites, and LCM. No significant gain measured in attitude towards math, although interviews indicated increased positive attitudes. Improvement in quality of questions and peer discussion.

Int, **Att**, Frac, Decm, NSns **(MS)**

Shealy, Barry Eugene. (1994). Conceptualizing the Development of Two First-Year Secondary Mathematics Teachers' Beliefs (University of Georgia). DAI-A 56/03, p. 856, Sep 1995. [AAC 9520868]

Open math investigations became important part of one teacher's instructional program, but didn't help students learn and made control difficult for another (n=2). Scheme proposed for understanding process of learning to teach in light of teachers' existing belief structure.

Tchg, TBlf, Lrng (HS & TE)

Shelton, Whitsitt Myles. (1994). Effects of an Integrated Learning System on Students Enrolled in College Algebra in a Community College (Baylor University). DAI-A 55/07, p. 1804, Jan 1995. [AAC 9500677]

Experimental students (n=168) did not demonstrate significant gain when compared to control group. No significant difference in number of course completers or attrition rate. Integrated learning system is capable of addressing broad range of learning styles.

Ach, Lrng, Alg, Styl **(PS)**

Shiah, Rwey Lin. (1994). The Effects of Computer-Assisted Instruction on the Mathematical Problem-Solving of Students with Learning Disabilities (Purdue University). DAI-A 55/08, p. 2347, Feb 1995. [AAC 9501770]

(n=30) One non-cognitive and two cognitive strategy programs used. All three treatments significantly improved math word problem solving. No significant differences among three treatments. Achievement significantly better on computer than paper-and-pencil tests.

PS, LD, CAI, Att, Ach, Lang **(EL)**

Simmt, Elaine. (1993). Living One's Philosophy of Mathematics: Graphing Calculators in High School Mathematics (University of Alberta). MAI 33/01, p. 39, Feb 1995. [AAC MM88302]

Teachers (n=6) did not use graphing calculators to enable students to investigate more open-ended questions. Their choices for activities with calculators, questioning, and student interactions reflected aspects of their philosophies of math and math education.

GCal, TBlf, Tchg, Alg, Clln **(HS)**

Simonsen, Linda Mae. (1995). Teachers' Perceptions of the Concept of Limit, the Role of Limits, and the Teaching of Limits in Advanced Placement Calculus (Oregon State University). DAI-A 56/06, p. 2158, Dec 1995. [AAC 9535977]

Teachers (n=6) felt intuitive understanding of limits essential, but devoted little time to intuitive understanding. Teachers' perceptions and classroom practice appeared affected by preparing students for AP exam, college calculus, and authority given to textbook.

TBlf, Cals, Clln (HS)

Slater, Marsha S. (1994). Pia's Odyssey: The Longitudinal Study of a High School Mathematics Teacher's Explorations with Writing to Learn With Limited English Proficient Students (New York University). DAI-A 55/09, p. 2705, Mar 1995. [AAC 9502443]

A teacher's (n=1) reflection needs to be focused on beliefs as well as practice for the possibility of personal construct revision; school culture institutionalizing interpretive teaching and collaboration can aid teacher change; expressive writing can influence shift to facilitation.

Writ, Lang, Tchg, Mtcg **(HS)**

Slavit, David Bryon. (1994). Algebra Instruction Using the Graphing Calculator and Its Effect on Students' Conceptions of Function (University of Delaware). DAI-A 56/01, p. 127, Jul 1995. [AAC 9516341]

Honors Algebra II students' (n=3) translation strategies revealed graphic representation allowed them to think about function in terms of an object possessing certain properties more than symbolic or numeric representations. **Alg, GCal, Lrng, Geom (SE)**

Smith, Steven Taylor. (1994). Accessible Value: Kindergartners' Construction of Multi-Level Groupings (University of California, Irvine). DAI-A 56/01, p. 128, Jul 1995. [AAC 9516610]

A broad range of the domain is rapidly accessible at each and every step in the construction of multi-level, base ten groupings; what usually takes years is accomplished in relatively small number of instructional sessions. **NSns, PlcV, Lrng (EC)**

Spatzer, William J. (1995). The Effect of Peer Tutoring on Increasing the Number of Correct Answers on a Multiplication Fact Sheet Utilizing Fact Families 0-9 When Given to Secondary-Aged, Mildly Disabled Students Enrolled in a Special Education Math Class: A Pilot Study (D'youville College). MAI 33/06, p. 1662, Dec 1995. [AAC 1374650]

Mildly disabled students (n=15) in a self-contained, racially integrated classroom were randomly assigned to a control group and an experimental group. No results given in the abstract.

LD, Grpg, Oral, M/D (HS)

Springer, Jeannine Marie. (1994). The Relationship of Sex Role Stereotyping and Sex Role Identification to Math Anxiety (United States International University). DAI-A 55/11, p. 3458, May 1995. [AAC 9507188]

Positive correlation between sex role stereotyping and math anxiety. No significant relationship among sex role stereotyping, sex role identification and math anxiety. Males more likely to see math as male domain. Higher age = higher anxiety tendency (n=152).

Gend, Anx, Att (PS)

St-Pierre, Louise. (1992). Modele D'evaluation De La Resolution De Problemes En Mathematique, Au Primaire. (Universite De Montreal). DAI-A 55/08, p. 2312, Feb 1995. Language FRENCH. [AAC NN88982] [Title in English: A Model of Problem Solving at the Primary Level]

A model for assessment of problem solving is presented. Model includes theoretical, methodological, and practical considerations. A prototype piloted in sixth-level primary class.

Assm, PS, Lrng **(EL)**

Stephens, Ceralyn Esther. (1994). An Assessment of the Basic Skills Competencies of Employees Within an Industrial Enterprise (Wayne State University). DAI-A 56/02, p. 433, Aug 1995. [AAC 9519969]

Employees (n=106) performed numeracy skills at ninth grade levels. Employees completing more formal education demonstrated greater proficiency. Employees believe assessment program will benefit all employees and company. **Assm, Arth**, Ach, Blf **(PS)**

Stephens, Jan Ellen. (1995). A Study of the Effectiveness of Supplemental Instruction on Developmental Math Students in Higher Education (University of North Texas). DAI-A 56/05, p. 1697, Nov 1995. [AAC 9529947]

Participant students scored significantly higher on later unit tests. The rate of D and F grades, as well as the number of course withdrawals, was lower for participants. A significance was found between female non-participants and participants in the latter part of the semester.

D/R, Ach, Gend (PS)

Stewart, Cisley Pearlina. (1995). The Effect of Training in Reading and Reasoning Upon the Mathematical Performance of Developmental-Level Community College Students (Walden University). DAI-A 56/06, p. 2182, Dec 1995. [AAC 9536777]

Two-thirds of adult students (n=6) experiencing an 'active' as well as 'collaborative' teaching approach (although it was individualized and self-paced) reported 'extreme helpfulness' of their participation on 'attitude improvement.'

Lang, PS, D/R, Att (PS)

Stiles, Nancy L. (1994). Graphing Calculators and Calculus (Illinois State University). DAI-B 55/11, p. 4888, May 1995. [AAC 9510432]

Students enjoyed calculators (Casio 7000) and believed they improved geometric intuition and understanding of calculus and made course easier. Students liked using researcher-developed, supplementary material. Majority thought calculator use should continue.

GCal, Cals, Att, Geom, Blf (PS)

Stockton, Mary Beth. (1994). The Influence of Same-Sex Role Modeling on the Math Anxiety, Math Self-Efficacy, and Math Performance of Female College Algebra Students (Northeast Missouri State University). MAI 33/01, p. 30, Feb 1995. [AAC 1357839]

Female students had significantly lower levels of math self-efficacy (n=346). Female professors did not influence class percentages of female students, but significant influence of male professors on class percentages of male students.

Alg, Gend, Att, Ach, Anx (PS)

Sullivan, Mary Mcgowan. (1995). Analysis of Conceptual Understanding in Undergraduate Descriptive Statistics Across Learning Style and Gender After Student Centered, Activity Oriented Instruction (University of Lowell). DAI-A 56/05, p. 1697, Nov 1995. [AAC 9531372]

Results (n=249) indicate that a student-centered, activity-oriented curriculum may support a broad range of students in developing their conceptual understanding in descriptive statistics.

Styl, Lrng, Stat, Gend (PS)

Sundberg, Sue E. (1994). Effect of Spatial Training on Spatial Ability and Mathematical Achievement as Compared to Traditional Geometry Instruction (University of Missouri - Kansas City). DAI-A 56/01, p. 128, Jul 1995. [AAC 9519018]

Spatial ability increased more for spatial groups than geometry groups (n=36). However, none of the groups increased their score on the test of mathematics achievement.

Geom, Ach, Vis (MS)

Sztajn, Paola. (1995). Elementary Teachers' Ideologies in an Era of Reform:Case Studies in Mathematics Education (Indiana University). DAI-A 56/06, p. 2159, Dec 1995. [AAC 9531533]

Based on factors such as their perceptions of their students' needs and of their roles as teachers, three teachers (n=3) interpreted Standards in very different ways and taught very different mathematics in their classrooms. Standards fail in lack ofideological debates.

Curr, Tchg (EL & TE)

Teague, Betty Jean. (1994). Mathematics Achievement and Its Relation to Career Aspirations of Eighth-Grade African-American, Anglo, and Hispanic Girls (Arizona State University). DAI-A 56/01, p. 128, Jul 1995. [AAC 9516259]

Anglo girls obtained highest mean score of three groups on math achievement. African-American girls obtained highest mean score on career aspirations (n>10,800). SES correlated the highest with math achievement regardless of ethnicity. **Ethn, Gend, Ach, Soc (MS)**

Telese, James Anthony. (1994). Alternative Assessment of At-Risk Students in Mathematics: The Effects of Context and Setting. (Texas A&M University). DAI-A 55/10, p. 3151, Apr 1995. [AAC 9506727]

Situated contexts which have relevancy to at-risk students' past knowledge and experiences tend to produce greater achievement in certain Texas Assessment of Academic Skills test's math content areas than others associated with a particular context.

Soc, Assm, Ach, Patt (SE)

Tompkins, Martha J. (1994). The Effect of Same-Sex Grouping Versus Mixed-Sex Grouping on Mathematics Achievement and Attitudes of Academically Gifted Fourth and Fifth Grade Females in the Urban Classroom. (Old Dominion University). DAI-A 55/10, p. 3128, Apr 1995. [AAC 9505887]

No significant differences in attitude or achievement and no significant relationships between attitudes and achievement. Same-sex groups report significantly more positive comments and significantly less negative comments about grouping arrangements.

Att, Gend, Grpg, Ach, Gift **(EL)**

Tookey, Keith R. (1994). Arithmetic Schema and Strategy Instruction (The University of Wisconsin - Madison). DAI-A 55/11, p. 3458, May 1995. [AAC 9432982]

'Schema and strategy' instruction improved performance more than 'strategy' alone. Lower ability members of pairs performed better in 'schema and strategy'; higher-ability members did not. **Ach, PS, Lrng**, Comp, Arth **(PS)**

Tumminello, Yvette Marie Crovetto. (1994). The Relationship of Mathematics Anxiety and Achievement in an Environment of Sociological Learning Style Preferences Within a Group of Seventh Grade Middle School Students (The University of Southern Mississippi). DAI-A 55/11, p. 3441, May 1995. [AAC 9509008]

Significant relationship between student math anxiety and math achievement. No significant relationship between anxiety and students' learning style preferences. Significant relationship between Concepts & Applications pre- and post-achievement scores.

Anx, Ach, Styl (MS)

Turegano Moratalla, Pilar. (1994). Concepts Pertaining to Measurement and the Learning of Infinitesimal Calculus [Los Conceptos En Torno A La Medida Y El Aprendizaje Del Calculo Infinitesimal] (Universidad Del Pais Vasco/Euskal Herriko Unibertsitatea). DAI-C 56/04, p. 814, Winter 1995. Language SPANISH. [Not available]

Purpose is to find model inside the mathematical context (a definition of integral alternative to Riemann) so it can be used in elaboration of a didactic proposal which allows introducing secondary students to the definite integral on a conceptual level. **Manp, Cals, Lrng (HS)**

Tyson, Pamela Ann. (1995). The Metaphor of Students as Mathematicians: Issues and Implications (Stanford University). DAI-A 56/01, p. 128, Jul 1995. [AAC 9516926]

Examined programs thought to accomplish this goal: A. Schoenfeld, M. Lampert, and J. S. Brown, A. Collins and colleagues. Study suggests that to degree that metaphor blurs important distinctions between students and mathematicians it is deemed problematic.

Phil, Lrng, Curr (ALL)

Uccellini, John Carl. (1994). Improving Students Geometric Proof Writing Through the Explicit Use of Proof Trees (University of Pittsburgh). DAI-A 56/01, p. 129, Jul 1995. [AAC 9521422]

Proof trees: Schematic diagrams used by students (n=98) to record their planning. No significant difference in achievement. Level of proof tree use significant. Students' proof trees provided insights into thinking not available through traditional instructional methods.

Geom, Prf, Comm, Rep **(SE)**

Van Akkeren, Jacob John. (1995). The Effect of Cognitive Modeling on Fourth-Grade Students' Performance and Self-Efficacy for Problem Solving in Mathematics (University of San Francisco). DAI-A 56/06, p. 2104, Dec 1995. [AAC 9535539]

Found that cognitive modeling group outperformed the control group but not the exemplar modeling group of fourth graders (n=84) on problem-solving performance in mathematics. There were no significant differences in self-efficacy among groups.

PS, Ach, Lrng, Aff **(EC)**

Van Stone, Eugene John. (1994). The Effects of Symbolic Manipulator Use in the Teaching of Mathematics: The Case of Derive (Indiana University). DAI-A 56/02, p. 485, Aug 1995. [AAC 9518589]

Findings: (1) Symbolic manipulators should be integral part of learning environment. (2) Sufficient hardware and technical support essential. (3) Assessment should incorporate use of symbolic manipulators consistent with use during instruction. **Comp, CIIn, Assm (SE, PS)**

Van Zoest, Laura Ranae. (1994). The Impact of Small-Group Discussion on Preservice Secondary Mathematics Teachers' Classroom Observations and Reflections (Illinois State University). DAI-A 55/11, p. 3441, May 1995. [AAC 9510433]

Small-group discussion is an effective method for increasing lower-order reflections. Participation did not affect number of observations or focus of observations/reflections. Facilitator involvement did not impact participants' subsequent observations or reflections.

Grpg, Oral, Mtcg, Tech **(SE & TE)**

Vezina, Nancy. (1994). Title:Le Developpement De La Partition En Nombres Pairs Et Impairs Chezles Jeunes Enfants (Universite De Moncton). MAI 33/04, p. 1044, Aug 1995. Language:FRENCH. [Title in English: The Development of the Distinction Between Even and Odd Numbers in Young Children]

Students (n=32) completed 14 tasks in Piagetian interviews. Ten processes were defined, some for identifying even numbers, some for odd. In general, odd-number distinctions proved more difficult for younger students. **NSns, Lrng (EC)**

Vincent, Suzanne. (1992). Construction Des Structures Multiplicatives Chez Des Jeunes Eleves Du Primaire (Universite De Montreal). DAI-A 55/07, p. 1862, Jan 1995. Language:FRENCH. [AAC NN88955] [Title in English: Construction of Multiplicative Structures Among Primary Students]

Transition from additive to multiplicative representations investigated. Several basic and derived processes defined. Two levels distinguished:(1) Strictly additive models. (2) Beginnings of differentiation between additive and multiplicative processes.

M/D, A/S, Lrng, Rep **(EL)**

Vodounon, Maurice Agossou. (1994). The Use of Computer Software and Cooperative Learning in College Algebra (Columbia University Teachers College). DAI-A 55/11, p. 3442, May 1995. [AAC 9511078]

Use of software, 'Precalculus', in laboratory, cooperative learning environment not effective. Student's (n=43) attitudes did not change toward math. Cooperative learning may be valuable method to teach math concepts to Black and Latino students.

Comp, Alg, Lrng, Ach, Att, Ethn **(PS)**

Vrooman, Deborah Virginia Allen. (1994). Effects of the Number of Mathematical Connections Taught on Students' Ability to Solve Unfamiliar Problems (University of South Carolina). DAI-A 55/07, p. 1863, Jan 1995. [AAC 9430934]

Fifth-grade classes assigned to three treatment groups were taught division of fractions using either zero connections (no word problems), one connection (one topical word problem), or two connections (two topical word problems). Results were inconclusive.

PS, Patt, Frac (MS)

Wachtel, Howard K. (1994). A Critique of Existing Practices for Evaluating Mathematics Instruction (University of Illinois at Chicago). DAI-A 56/01, p. 129, Jul 1995. [AAC 9516705]

82% of two-year and four-year colleges and universities responding (n=170) required use of student written evaluations in evaluation of math teaching, and 65% use evaluation same forms as in all other subjects. Half require classroom visitations for some teachers.

Assm (PS & TE)

Wade, Eileen Gray. (1994). A Study of the Effects of a Constructivist-Based Mathematics Problem Solving Instructional Program on the Attitudes, Self-Confidence, and Achievement of Post Fifth-Grade Students (New Mexico State University). DAI-A 55/11, p. 3411, May 1995. [AAC 9510417]

Found significant gain in problem solving ability in achievement. Low achieving students showed significantly greater gain than high achieving students on researcher-developed test, but not on the achievement tests. Attitude scales revealed no significant differences.

PS, Curr, Ach, Blf, Att **(MS)**

Wagner, Douglas Alan. (1994). A Comparative Study of Atlanta Math Project and Future Atlanta Math Project Teachers' Questioning and Interactive Decision-Making Strategies (Georgia State University). DAI-A 55/10, p. 3128, Apr 1995. [AAC 9507435]

Number and percentage of questions asked at different cognitive levels of AMP and future AMP teachers not significantly different. AMP teachers were metacognitive in nature and engaged in interactive decision-making that encouraged student-centered classroom.

Clln, Plan, Mtcg, Prsv, Isrv **(SE & TE)**

Walker, Lyndarine. (1995). Prediction of Success in a Mathematics Course for Black Standard Three Pupils (University of Pretoria). MAI 33/06, p. 1664, Dec 1995. [Not available]

Evaluated General Scholastic Aptitude Test, Figure Classification Test, and Scholastic Aptitude Test Battery in selecting black, standard three pupils into a math program. No conclusions could be drawn from the data. **D/R, Ach, Assm,** Ethn **(EL)**

Walsh, Thomas Patrick. (1994). A Study of the Effects of Computer Programming on Problem Solving Ability in High School Students (Columbia University Teachers College). DAI-A 55/07, p. 1863, Jan 1995. [AAC 9432589]

Experimental group improved more than control group in quality of students' problem-solving ability. Significant improvement in experimental group. Males appear to have improved, but not females, due to programming exercise. **PS, Comp,** Gend **(HS)**

Walsh-Cavazos, Sharon. (1994). A Study of the Effects of a Mathematics Staff Development Module on Teachers' and Students' Achievement (Texas Tech University). DAI-A 56/01, p. 165, Jul 1995. [AAC 9517241]

Teachers (n=72) receiving training had higher achievement in statistics, probability, and graphing, and had more positive attitudes toward teaching these topics. Their fifth graders (n=111) had significant achievement gains compared to control.

Isrv, TAtt, Ach, Prob, Stat **(MS & TE)**

Wang, Xiaoping. (1994). Gender Differences in Spatial, Verbal, and Mathematical Abilities for Chinese Students-A Cross-Cultural Comparison (The University of Iowa). DAI-A 55/12, p. 3823, Jun 1995. [AAC 9513630]

Greatest gender differences in Three-Dimension Rotation test (favoring males), Number Comparison test (favoring females), and Digit Span test (favoring females). Gender differences smaller for Chinese (n=321) than U.S., but same pattern. **CC, Gend, Lrng,** Vis **(HS)**

Ward, Bonnie C. (1994). Student and Teacher Attitudes Concerning Computer Adaptive Testing Methods in a Middle School Setting (University of Maryland College Park). DAI-A 55/10, p. 3062, Apr 1995. [AAC 9508075]

Majority support computer adaptive testing. Students (n=343) positive clarity of directions and graphics, and ease of reading; bothered by inability to review and change answers. Teachers (n=6) positive on shorter testing time, convenience, and immediate scoring.

Comp, Assm, Att, D/R, TBIt **(MS)**

Weber, William Braman, Jr. (1994). Connecting Concepts of Numbers to Mental Computation Procedures in Grades Seven, Eight, and Nine (The University of Michigan). DAI-A 56/01, p. 79, Jul 1995. [AAC 9513277]

Experimental group (n=544) showed significant improvement in mental computation achievement and performed significantly better than control group (n=485) on the mental computation achievement test. **NSns, Frac, Decm,** RaPc, Ach **(SE)**

Weissman, Rhonda Neuborn. (1995). The Effects of Learning Computer Programming on Heuristic Usage and Metacognitive Activity of Students Engaged in Mathematical Problem Solving (Columbia University Teachers College). DAI-A 56/04, p. 1281, Oct 1995. [AAC 9525501]

Programmers (n=40) achieved somewhat greater than nonprogrammers on nonroutine math problems. Results suggest the use of certain systematic processes may be conducive to transfer while like planning and reflection upon process may not. **Comp, PS, Mtcg, Ach (HS)**

Wholeben, Belinda Marie. (1994). Assessing Conceptual Change Through Concept Mapping (Northern Illinois University). DAI-A 56/02, p. 499, Aug 1995. [AAC 9520177]

Math and science teachers (n=19) attending symposium on fractals, chaos, and dynamics constructed concept maps. Results support use of concept mapping to measure conceptual change.

AdvM, Lrng, Assm, Isrv (SE & TE)

Wilding, Michael Cary. (1995). Forces Influencing Pre-Collegiate Level Mathematics Students to Pursue, or Not Pursue, Collegiate Level Mathematics (University of California, Los Angeles). DAI-A 56/04, p. 1226, Oct 1995. [AAC 9526469]

For students (n=15,995) who enrolled in a precollegiate level mathematics course within the Los Angeles Community College District, the most powerful predictor (among 56 variables) of pursuing two-year college, collegiate level mathematics is 'educational experience.'

D/R, Soc, Ethn (HS & PS)

Wilkerson, Trena Lashley. (1994). The Relationship Between Teaching Efficacy and Teaching Styles of Secondary Mathematics Teachers (The University of Southern Mississippi). DAI-A 55/11, p. 3404, May 1995. [AAC 9509011]

Personal teaching efficacy (n=101) was significantly related to seven teaching style factors. No significant relationship was found between teacher efficacy and teaching style factors and no significant interaction effects were found. **Tchg, TBlf (HS & TE)**

Wilkins, Cynthia Welsh. (1995). The Effect of the Graphing Calculator on Student Achievement in Factoring Quadratic Equations (Mississippi State University). DAI-A 56/06, p. 2159, Dec 1995. [AAC 9533427]

Experimental group scored significantly higher solving word problems involving factoring and in evaluating factoring concepts; no significant difference between groups in basic factoring skills. Females scored higher than males in experimental group.

Alg, GCal, Ach, PS, Gend (MS)

Williams, Alfred Charles. (1994). An Analysis of Intervention Programs Used for the Recruitment and Retention of Minority Students in High School Mathematics (Columbia University Teachers College). DAI-A 55/11, p. 3442, May 1995. [AAC 9511080]

Research resulted in ranking of model programs (highest to lowest): (1) Project 2061; (2) USSAMP (Urban Science/Math); (3) Algebra Project; (4) UCSMP; (5) Opening the Gate Project; and (6) Family Math Project. Stronger programs emphasized community support.

Ethn, Gend, Curr, Soc, D/R (HS)

Williams, Carol Gentry. (1994). Using Concepts Maps to Determine Differences in the Concept Image of Function Held by Students in Reform and Traditional Calculus Classes (University of California, Santa Barbara). DAI-A 56/03, p. 856, Sep 1995. [AAC 9522829]

Reform group used terminology common in reform text and had fewer algorithmic references. Traditional students' maps contained more algorithmic references to hand-graphing techniques. Both groups (n=28) scored same on example-nonexample questionnaire.

Cals, Lrng, Curr, Ach (PS)

Williams, Edward Allen. (1994). A Comparative Study of Applied Mathematics I And Ii Versus Traditional Algebra I (University of Arkansa). DAI-A 55/12, p. 3712, Jun 1995. [AAC 9513207]

Compared effects of an applied academic approach to teaching algebra I with the effects of a traditional method (n=191). Traditional group scored significantly higher than experimental group on National Proficiency Survey series Algebra 1 Test. **Alg, Tchg, Ach**, Curr **(HS)**

Williams, Frank, Jr. (1994). Working with Percents (California State University, Dominguez Hills). MAI 33/06, p. 1647, Dec 1995. [AAC 1374777]

Field tested with seventh-graders, Working with Percents designed to give tutoring and practice in discovering type of percent problem, setting up in one simple form, and using a standard formula to make solving easy. Results significant (not given in abstract).

RaPc, Comp (MS)

Williams, Susan Monroe. (1994). Anchored Simulations: Merging the Strengths of Formal and Informal Reasoning in a Computer-Based Learning Environment (Vanderbilt University). DAI-A 56/01, p. 80, Jul 1995. [AAC 9514973]

Compares anchored simulation to drill and practice software in solving video problems. Simulation students made more spontaneous predictions and correct strategies. Average students' performance dropped significantly for problems in other contexts.

Comp, Tech, PS, Lrng, Ach **(MS)**

Williamson, Kenneth Cal, III. (1994). The Effects of Verbal and Graphic Explicitness on the Problem-Solving Ability of College Students in Conditional Proportions (The University of Oklahoma). DAI-A 55/08, p. 2330, Feb 1995. [AAC 9501162]

Correct response for explicit question first order significantly better than implicit question first order for low/moderate levels of explicitness. Columnar data table more likely to have high rate of correct responses than matrix data table. (n=186).

Wrt, RaPc, Lang, Comp, Ach, Assm **(PS)**

Wilson, Boyd Lee. (1994). The Development and Evaluation of an Instructional Program in Statistical Literacy for Use in Post-Secondary Education (Illinois State University). DAI-A 56/03, p. 857, Sep 1995. [AAC 9521347]

Significant gains made by all groups in statistical literacy and valuing statistics (n=52). No significant differences between two age groups. Significant gains in confidence by all groups except little-or-no-algebra group. Women scored lower than men in confidence.

Stat, Curr, Writ, Tech, Comp, Gend, Att **(PS)**

Woodward, Ralph F. Jr. (1994). Curriculum Renewal and Achievement Assessment Via Computer Management Systems in Mathematics (Iowa State University). DAI-A 55/09, p. 2706, Mar 1995. [AAC 9503609]

Research provides direction and samples of each sequential step needed to incorporate goals and assessment components between existing and renewed curriculum of a district to curriculum and assessment materials based on research by School Improvement Model.

Curr, Assm, Comp (MS)

Wort, Meredith Merle. (1995). Identifying Characteristics of Mexican American High School Students Who are Successful in Mathematics (University of Denver). DAI-A 56/06, p. 2159, Dec 1995. [AAC 9532957]

Emergent themes: work ethic, cultural participation, parental encouragement, nonauthoritarian parenting techniques, family values, mentors, early success in mathematics, and special school programs. Students' (n=8) math teachers were well-qualified.

Soc, Ethn, Ach, Aff, Tchg **(HS)**

Wright, Carey Marlene. (1994). Attitudes and Mathematical Learning Activities Related to Achievement of Third- and Fifth-Grade African-American and White Male and Female Students in Maryland Public Schools (University of Maryland College Park). DAI-A 56/04, p. 1245, Oct 1995. [AAC 9526333]

Self-reported, positive attitudes about math and confidence in themselves made significant difference on math achievement. Self-reported, frequent use of learning activities in classroom made a statistically significant difference on their math achievement.

Att, Ach, Ethn, Gend **(EL)**

Zang, Richard Alan. (1994). Inferring Internal Strategic Problem Representation and Its Development:A Two-Year Case Study with Four Elementary School Children (Rutgers The State University of New Jersey - New Brunswick). DAI-A 55/12, p. 3775, Jun 1995. [AAC 9514127]

Evidence in this longitudinal study (n=4) that some children spontaneously developed strategies previously untaught. In the representations they constructed, almost all the children abandoned the geometry in the problems.

Styl, PS, Geom **(EL)**

Zieberth, Steven William. (1994). An Evaluation Study of an Inservice Project Designed to Promote Leadership in Mathematics Education (The University of Iowa). DAI-A 56/04, p. 1282, Oct 1995. [AAC 9525229]

Teachers reported extensive implementation of cooperative learning techniques and technology. Moderate implementation of multiple geometries, discrete mathematics, and computers. Participants showed shift to more group work and alternative assessments.

Tech, Grpg, Isrv, DscM, Geom, Assm, GCal **(SE & TE)**

Zuskin, Terri E. (1994). The Effects of Games on Increasing Interest and Achievement in Middle School Mathematics (Christopher Newport University). MAI 33/06, p. 1647, Dec 1995. [AAC 1374646]

No increase in interest in games or worksheet group. Games and worksheets equally effective in raising students' achievement. No difference in affecting intermediate term retention.

Ach, Frac, Aff (MS)

Dissertations by Institution

Canada

Acadia University
Beaton

Concordia University
Poirier

Ecole Polytechnique, Montreal
Haguel; Boulet

Simon Fraser University
Prapas

University of British Columbia
Anka

University of Manitoba
Brownridge

University of New Brunswick
Maro

Universite De Moncton
Vezina

Universite De Montreal
Berte; Gattuso; St-Pierre; Vincent

Universite Laval
Garneau; Pepin

University of Alberta
Cisse; Davis; Garegae-Garekwe; Gierl; Lemai Tre; Summt

University of Ottawa
Mainville-Lanthier

University of Toronto
Cordeau; Gadanidis; Kells; Mckenzie

University of Victoria
Donnelly

Northern Ireland

Queen's University of Belfast
Harrison; Lyons

South Africa

University of Pretoria
Walker

Spain

Universidad Del Pais Vasco/Euskal Herriko Unibertsitatea
Turegano Moratalla

Universitat Autonoma De Barcelona
Deulofeu Piquet; Fiol Mora

Universitat De Valencia
Gomez Alfonso; Jaime-Pastor; Puig

United Kingdom

Open University
Hewitt; Pimm

United States

Adler School of Professional Psychology
Martin

American International College
Abrahamson

American University
Longo; Mcshea; Mokatrin

Arizona State University
Ferrell; Rice; Teague

Auburn University
Halpin

Baylor University
Padgett; Shelton

California State University, Dominguez Hills
Williams; Royo; Igboko

California State University, Long Beach
Gibbons

Central Michigan University
Browning

Central Missouri State University
Austin

Charleston Southern University
Belanus

Christopher Newport University
Hodgkins; Mixon; Zuskin

Claremont Graduate School
Fox

Clemson University
Caldwell

Cleveland State University
Cowen

Colorado School of Mines
Bertanzetti

Colorado State University
Corbin

Columbia University
Berger; Coombs; Correll; Delvon; Diello; Edwards; Fitzsimmons; Horsey; Houle; Lee; Selisky; Vodounon; Walsh; Weissman; Williams

Cornell University
Dennis; Doerr; Rice

D'youville College
Jones; Spatzer

Delta State University
Mayers

Florida Institute of Technology
Oster

Florida State University
Aspinwall; Eubanks

Fordham University
Mutino

Georgia State University
Frerking; Loggins; Paschal; Sanders; Wagner

Grambling State University
Pruett

Grand Valley State University
Morris

Harvard University
Biggerstaff; Harris; Kiraga

Illinois State University
Cobb; Stiles; Van Zoest; Wilson

Indiana University
Haynes-Gaines; Maple; Mohamad-Ali; Sztajn; Van Stone

Indiana University of Pennsylvania
Benes-Lafferty

Iowa State University
Baker; Chung; Fyfe; Woodward

Kansas State University
Jia; Rupp

Lehigh University
Becker; Kistler; Shear

The Louisiana State University And Agricultural And Mechanical Col.
Bates; Davis; Golding; O'callaghan

Maharishi International University
Muehlman

MGH Institute of Health Professions
D'adamo; Kelly

Michigan State University
Grant; Heaton; Keen; Norris; Roberson; Roberts

Mississippi State University
Hong; Hunnicutt; Segars; Wilkins

New Mexico State University
Wade

New York University
Grapin; Slater

North Carolina State University
Atkins; Coston

Northeast Missouri State University
Stockton

Northern Arizona University
Bisse

Northern Illinois University
Covalt;Wholeben

Ohio State University
Byron; Cobbs; Erickson; Fiske; Galindo; Galindo-Morales; Hartog; Kimball; Nicol; Porzio

Ohio University
Alkhateeb

Oklahoma State University
Piazza

Old Dominion University
Fogarty; Tompkins

Oregon State University
Krussel; Simonsen

Peabody College for Teachers of Vanderbilt University
Goodson-Espy

Pennsylvania State University
Santiago-Collazo

Purdue University
Shiah

Rutgers The State University of New Jersey - New Brunswick
Kalustian; Keezer; O'brien; Purdy; Zang

Saint Louis University
Holley; Sachs

San Jose State University
Allen; Nguyen; Rackley

Southern Connecticut State University
Diamantis

Southern Illinois University at Carbondale
Dorn; Edwards; Klages

Stanford University
Cook; Tyson

State University Of New York At Buffalo
Schrier

Syracuse University
Riordan

Temple University
Eizen; Harper; Laub

Texas A&M University
Cooper; Fossa; Liles; Reinke; Telese

Texas Southern University
Mcgaughey; Patterson

Texas Tech University
Walsh-Cavazos

United States International University
Sadatmand; Springer

University of Alabama
Harper; Kim; Lockwood

University of Arizona
Kahn

University of Arkansas
Blair; O'brien; Williams

University of California, Irvine
Smith,

University of California, Los Angeles
Chao; Goff; Niemi; Rhine; Wilding

University of California, Riverside
Renne

University of California, Santa Barbara
Herman; Morales; Williams

University of Chicago
Fernandez

University of Cincinnati
Fasko

University of Connecticut
Kinsella

University of Delaware
Mcnair; Slavit

University of Denver
Wort

University of Detroit Mercy
Gonte

University of Florida
Adams; Fouche; Pajares

University of Georgia
Adamson; Barnes; Chism; Hancock; Hancock; Huntington; Koscinski; Manouchehri; Pagnucco; Ross; Shealy

University of Hawaii
Sanchez

University of Houston
Bohn; Hunt; Kneese; Nath; Plemons

University of Illinois at Chicago
Gordon; Ibe; Isaacs; Wachtel

University of Illinois at Urbana-Champaign
Montes

University of Iowa
Foletta; Gullanartsiri; Hintz; Mcarthur; Schnaithman-Vincent; Wang; Zieberth

University of Kansas
Laberge; Rolfs

University of Lowell
Sullivan

University of Maryland College Park
Dyer; Golden; Ward; Wright

University of Massachusetts
Cabral-Pini; Connors; Mullinix; Shimpi

University of Michigan
Kinel; Kline; Kolnowski; Weber

University of Mississippi
Hughes; Price

University of Missouri - Kansas City
Sundberg

University of Nebraska - Lincoln
Larson

University of New Hampshire
Johnson

University of North Carolina at Greensboro
Blood; Frost; Griffith; Penta

University of North Dakota
Pankow

University of North Texas
Farr; Pennett; Scott; Stephens

University of Northern Colorado
Olsen

University of Oklahoma
Chen; Fine; Mather; Moore; Nicholas; Saleh; Williamson

University of Pittsburgh
Cai; Haney; Ismail; Muntersbjorn; Parker; Schloemer; Uccellini

University of Rochester
Fasse

University of San Francisco
Gross Ray; Van Akkeren

University of South Carolina
Duncan; Franklin; Liu; Ryan; Vrooman

University of South Dakota
Brancov; Gamble

University of South Florida
Cousins

University of Southern California
Grewer; Hillen

University of Southern Mississippi
Tumminello; Wilkerson

University of Tennessee
Crates; Goins; Kummins; Long

University of Texas At Austin
Kidd; Lesser; May; Mireles; Pandiscio; Schneider

University of Toledo
Brauer

University of Utah
Gibb; Niederhauser

University of Washington
Atterberry

University of Wisconsin - Madison
Bailey; Baker; Clarke; Hankes; Johnson; Kusch; Lee; Tookey

Vanderbilt University
Williams

Virginia Polytechnic Institute And State University
Jamison, Perry

Walden University
Kanai, Rentschler, Stewart

Washington State University
Ivey

Wayne State University
Brehmer-Evans, Hamilton, Hechler, Stephens

Western Michigan University
Geskus

Research Articles Published in 1995

Gale A. Watson, *West Liberty State College*

Michelle K. Reed, *The Ohio State University*

This section lists 208 articles in mathematics education research that were published during 1995. Each entry is coded (see Key to Codes) with 1-3 ***Major*** and any number of *Minor* topic codes, as well as the grade ***LEVEL*** (in parentheses). Studies related to preservice or inservice teacher education are indicated by the appropriate topic codes (*Prsv, Isrv*). The ***LEVEL*** designated for teacher education or teacher studies first indicates the grade level(s) at which the intern or teacher participants teach, followed by the level "TE" for "teacher education" or "teacher." All entries are indexed by ***Major*** codes at the end of this volume. A list of the journals searched and the number of articles included from each is provided at the end of this section.

Adler, J. (1995, May). Dilemmas and a Paradox—Secondary Mathematics Teachers' Knowledge of Their Teaching in Multilingual Classrooms. *Teaching and Teacher Education* 11(3), 263-274.

This study investigates the dynamics of multilingualism and the teaching and learning of mathematics in junior secondary classrooms in South Africa. The classrooms are located in desegregated State, Private, and Black State schools. **Ethn, Lang, Oral**, CC, Lrng, TKnw **(SE)**

Anazonwu, Charles O. (1995). Locus of Control, Academic Self-concept, and Attribution of Responsibility for Performance in Statistics. *Psychological Reports* 77(2), 367-370.

The performance of 33 men and 28 women on statistical methods in psychology were studied. Students who made ability or effort attributions performed better and had higher internal control scores than students with luck ascriptions. **Ach, Aff, Stat**, Blf **(PS)**

Anders, Deborah. (1995, March). A Teacher's Knowledge as Classroom Script for Mathematics Instruction. *The Elementary School Journal* 95(4), 311-324.

This study portrays a primary teacher's classroom knowledge and understanding of teaching. The script extends research on "curriculum scripts" and integrates research on teachers' personal, practical, and pedagogical knowledge. **Tchg, TKnw, Isrv (EC & TE)**

Anderson, Ann. (1995, Winter). Effects of the Implicit or Explicit Use of 1 on Students' Responses When Multiplying Monomials. *Focus on Learning Problems in Mathematics* 17(1), 34-48.

Tests of (n=105) ninth-graders involving the addition and multiplication of monomials. Common, systematic errors made were related logically to the symbols used and the algebraic convention of using an implicit 1 as an exponent. **Alg, Rep**, A/S, M/D **(HS)**

Armstrong, Barbara E.; Larson, Carol Novillis. (1995, January). Students' Use of Part-Whole and Direct Comparison Strategies for Comparing Partitioned Rectangles. *Journal for Research in Mathematics Education* 26(1), 2-19.

Identified and classified strategies used by 36 fourth-, sixth-, and eighth-graders solving comparison of area tasks. Most students used direct comparison but use of part-whole increased with an introduction to fractional terms and symbols. **Meas, Rep**, Frac, Lrng **(EL)**

Ashcraft, Mark H. (1995). Cognitive Psychology and Simple Arithmetic: A Review and Summary of New Directions. *Mathematical Cognition* 1(1), 3-34.

An historical overview and summary of research conducted on simple arithmetic in the past 20 years. Two directions in current research: working memory in mental arithmetic and cognitive consequences of math anxiety. **Arth, Lrng, Revw, Anx (EL)**

Ashcraft, Mark H.; Christy, Kelly S. (1995, November). The Frequency of Arithmetic Facts in Elementary Texts: Addition and Multiplication in Grades 1-6. *Journal for Research in Mathematics Education* 26(5), 396-421.

Tabulation of addition and multiplication fact frequencies in texts for grades 1-6 showed that facts with operands larger than 5 occurred only half as frequently as those with operands in the 2-5 range. Theoretical and practical implications. **Arth, Matl, Impl, Curr (EL)**

Atweh, Bill; Cooper, Tom. (1995, April). The Construction of Gender, Social Class and Mathematics in the Classroom. *Educational Studies in Mathematics* 28(3), 293-310.

Math content constructed in classes at two all-girls' schools. That from the high socioeconomic school was perceived as required for entry into higher education. That from the low socioeconomic school as needed for everyday life transactions.

Curr, Gend, Soc, Ethn (HS)

Ayalon, Hanna. (1995, November). Math as a Gatekeeper: Ethnic and Gender Inequality in Course Taking of the Sciences in Israel. *American Journal of Education* 104(1), 34-56.

The article examines between-school variation in gender and ethnic inequality in physics and biology courses. Inequality is more acute in schools that use math as a filter. Males take more physics and females take more biology. **CC, Ethn, Gend, Soc (HS)**

Baroody, Arthur J. (1995). The Role of the Number-After Rule in the Invention of Computational Shortcuts. *Cognition and Instruction* 13(2), 189-219.

A case study examines how a child classified as mentally handicapped devised a strategy for counting on. Follow-up studies with 14 other students confirmed that the 'number-after rule' may provide a basis for counting on. **LD, NSns, Lrng (EC)**

Battista, Michael T.; Clements, Douglas H. (1995, January). Connecting Research to Teaching: Geometry and Proof. *Mathematics Teacher* 88(1), 48-54.

Examines research relevant to the role that formal proof should play in high school geometry. Includes: establishing truth, students' learning of proof, developing the notion of proof, alternative approaches, and computer programs. **Geom, Prf, Revw, Comp, Lrng (HS)**

Bauman, Steve; Martin, Bill. (1995, May). Assessing the Quantitative Skills of College Juniors. *College Mathematics Journal* 26(3), 214-20.

Describes a quantitative assessment project, its findings and its impact. Includes: roles for the mathematics department, department needs and student capabilities, three levels of expectations, and patterns of student performance on quantitative tasks. **Ach, Assm, DR (PS)**

Beidleman, James; And Others. (1995, December). Increasing Students' Conceptual Understanding of First Semester Calculus Through Writing. *PRIMUS* 5(4), 297-316.

Improved writing and higher grades of first-semester calculus students (n=25) were the result of a variety of written assignments used in the course. Includes sample writing assignments.

Ach, Cals, Writ (PS)

Bell, Alan. (1995, March). Purpose in School Algebra. *The Journal of Mathematical Behavior* 14(1), 41-73.

Clarifies aims and objectives of school algebra, reviews research on students' performance, and suggests curriculum modifications. A keynote address of the Algebra Working Group of the 17th ICME held in Quebec City, Canada (Aug. '92). **Ach, Alg, Curr, Revw (SE)**

Bessant, Kenneth C. (1995, July). Factors Associated with Types of Mathematics Anxiety in College Students. *Journal for Research in Mathematics Education* 26(4), 327-345.

Factor analysis of MARS and SPQ given to 173 introductory statistics students found six anxiety factors: general evaluation, everyday numerical, passive observation, performance, math test, and problem-solving anxieties. **Anx, Stat (PS)**

Boekaerts, Monique; And Others. (1995, April). Solving Math Problems: Where and Why Does the Solution Process Go Astray? *Educational Studies in Mathematics* 28(3), 241-262.

Describes a model of adaptable learning which considers the interaction between affective and cognitive variables in learning situations and an instrument for measuring relevant aspects of this model. Results for (n=30) sixth graders.

Aff, Lrng, PS, Ach, Assm, Ethn **(MS)**

Bonotto, C. (1995, April). SULL'INTEGRAZIONE DELLE STRUTTURE NUMERICHE NELLA SCUOLA DELL'OBBLIGO. *L'Insegnamento della Mathematica e delle Scienze Integrate* 18A(4), 311-338.

Attempted to verify knowledge regarding decimal and rational numbers in children aged 10-14. Discusses how pupils can receive and assimilate extensions of the number system from natural numbers to decimals and fractions. **Decm, Frac, NSns**, Ethn, Lrng **(K-12)**

Boone William J.; And Others. (1995). Teachers' Attitudes Towards Distance Learning Technology in a Science/Society Global Issues Course. *Journal of Computers in Mathematics and Science Teaching* 14(3), 305-323.

Surveys of urban K-12 mathematics and science teachers' attitudes towards distance learning in a science/society global issues course using two-way audio/two-way full motion technology. **TAtt, Tech, Isrv (K-12 & TE)**

Bos, Nathan D.; And Others. (1995). Research Notes: Telecommunications for Teachers: Supporting Reflection and Collaboration Among Teaching Professionals. *Journal of Computers in Mathematics and Science Teaching* 14(1/2), 187-202.

Describes a number of Computer-Mediated-Communications networks designed to support K-12 teachers and teacher education programs. The article is structured around a number of existing strands of educational research. **Prsv, Tech, Impl (ALL)**

Bridgeman, Brent; Harvey, Anne; Braswell, James. (1995, Winter). Effects of Calculator Use on Scores on a Test of Mathematical Reasoning. *Journal of Educational Measurement* 32(4), 323-340.

College-bound juniors from 275 high schools were studied to determine benefits of calculator use on 70 math questions from the SAT. Benefits were analyzed by gender and ethnic groups.

Calc, Ethn, Gend, Ach, Assm **(HS)**

Bryant, Jerry. (1995, Summer). Language and Concepts in Geometry: Implications for Sign Language Research. *Focus on Learning Problems in Mathematics* 17(3), 41-56.

There is some evidence that following curricula that are direct translations of English can have deleterious affect on student's learning sign language. How can ideas in mathematics be conceptualized and conveyed in a visuo-spatial language?

Geom, LD, Impl, Revw, Vis **(ALL)**

Brysbaert, Marc. (1995). Arabic Number Reading: On the Nature of the Numerical Scale and the Origin of Phonological Recoding. *Journal of Experimental Psychology: General* 124(4), 434-452.

The experiments described in this article examine number reading and processing times of individual numbers. Phonological recoding in silent reading happens after the internal semantic numerical representation has been accessed. **Lang, PlcV, Rep (ALL)**

Burn, R. P.; Wood, N. G. (1995). Teaching and Learning Mathematics in Higher Education. *Teaching Mathematics and Its Applications* 14(1), 28-33.

Interviews of students (n=68) and lecturers (n=32) in honors mathematics courses suggested lecturers' have unrealistic estimates of students' private study time and lecturers lecture too fast. Includes recommendations for curriculum development. **Att, TAtt, Curr,** Ethn **(PS)**

Burton, Leone. (1995, April). Moving Towards a Feminist Epistemology of Mathematics. *Educational Studies in Mathematics* 28(3), 275-291.

There is extensive literature on gender and the nature of science, three aspects of which (philosophy, pedagogy, and epistemology) make effective starting points to ask questions about gender and mathematics similar to those asked in science. **Gend, Phil, Tchg (K-12)**

Bussi, Maria G. Bartolini; Boni, Mara. (1995, March). ANALISI DELL'INTERAZIONE VERBALE NELLA DISCUSSIONE MATEMATICA: UN APPROCCIO VYGOTSKIANO. *L'Insegnamento della Mathematica e delle Scienze Integrate* 18A(3), 221-256.

A methodology for analyzing verbal interaction in mathematical discussion which is both a product and an instrument of a research project in grades 1-8. Analyzes an example of discussion from a first-grade classroom about point of view.

Oral, Rsch, Tchg, Assm, Ethn, Vis **(EL)**

Cai, Jinfa; Silver, Edward A. (1995, November). Solution Processes and Interpretations of Solutions in Solving a Division-with-Remainder Story Problem: Do Chinese and U.S. Students Have Similar Difficulties? *Journal for Research in Mathematics Education* 26(5), 491-97.

Only 25% of fifth- and sixth-grade Chinese students (n=186) correctly solved a division-with-remainder computation task, about the same success rate as with American students, and only 1/6 of the students could interpret the result. **CC, M/D, PS (MS)**

Campbell, K. Jennifer; And Others. (1995, March). Visual Processing During Mathematical Problem Solving. *Educational Studies in Mathematics; 28(2)* 177-194.

Investigated individual differences in (n=100) tenth-graders' forms of visual thinking and related intuitions in the context of math problem solving. Results suggest that success at problem solving was related to logical operational ability. **Lrng, PS, Vis,** Ethn **(HS)**

Candelle-Elawar, Maria. (1995, January). Effects of Metacognitive Instruction on Low Achievers in Matheamtics Problems. *Teaching and Teacher Education* 11(1), 81-95.

This study investigated the effects of metacognitive instruction in mathematics on (n=489) low-achieving third- through eighth-graders. The study was conducted in 18 classes in schools from a district with a majority Hispanic population. **Ethn, Mtcg, Tchg,** Ach **(EL & MS)**

Casey, M. Beth; and others. (1995). The Influence of Spatial Ability on Gender Differences in Mathematics College Entrance Test Scores Across Diverse Samples. *Developmental Psychology* 31(4), 697-705.

This investigates the relationship between mental rotation ability and gender differences in math SAT across diverse samples (N=760). Results suggested that spatial ability may be partly responsible for mediating gender differences in math. **Ach, Gend, Vis (SE & PS)**

Chambers, Donald L. (1995, February). Research into Practice: Improving Instruction by Listening to Children. *Teaching Children Mathematics* 1(6), 378-380.

Presents examples of instructional episodes showing changing patterns of communication between teacher and students. Gives action research ideas designed to help teachers listen to children describe how they think. **Lrng, Impl, Oral,** Prsv, Rsch **(EC)**

Chandler, Donald G.; Brosnan, Patricia A. (1995, March). A Comparison Between Mathematics Textbook Content and a Statewide Mathematics Proficiency Test. *School Science and Mathematics* 95(3), 118-123.

Percentages of mathematics content for seven text series, grades 1-8, were compared with percentages of the five strands of the Ohio Ninth Grade Proficiency Test. Implications are discussed. (MSD) **Assm, Curr,** Alg, Arth, Geom **(EL)**

Chard, David J.; Kameenui, Edward J. (1995, Spring). Mathematics Instruction for Students with Diverse Learning Needs: Heeding the Message of the Cheshire Cat. *Focus on Learning Problems in Mathematics* 17(2), 24-38.

Presents six research-based instructional strategies based on the NCTM Standards to use with LD students: big ideas, conspicuous strategies, mediated scaffolding, strategic integration, ground knowledge, and judicious review. **LD, Tchg, Impl (K-12)**

Chen, Chuansheng; Stevenson, Harold W. (1995). Motivation and Mathematics Achievement: A Comparative Study of Asian-American, Caucasian-American, and East Asian High School Students. *Child Development* 66(4), 1215-1234.

Four groups of (N=4857) students whose mean age was 17.6 years were given a curriculum-based mathematics test and questionnaire. Factors associated with achievement include high standards, beliefs, attitudes, studying, & social factors. **Ach, Aff, CC,** Att, Blf, Soc **(HS)**

Cipoletti, Lisa; Butterworth, Brian. (1995). Toward a Multiroute Model of Number Processing: Impaired Number Transcoding with Preserved Calculation Skills. *Journal of Experimental Psychology: General* 124(4), 375-390.

This article describes a patient suffering from a degenerative condition who shows severe difficulty in number transcoding. Unable to read or write them, he maintains the ability to perform oral and written calculations. **Arth, LD, PlcV (ALL)**

Cobb, Paul. (1995, May). The Relevance of Practice: A Response to Orton. *Journal for Research in Mathematics Education* 26(3), 230-253.

A response claims that an earlier article presents a highly idiosyncratic interpretation of the Cartesian dualism, creates a gulf between theory and practice, and implies that the social and cultural aspects of mathematical activity can be dismissed. **Lrng, Phil, Soc (ALL)**

Cobb, Paul. (1995, July). Cultural Tools and Mathematical Learning: A Case Study. *Journal for Research in Mathematics Education* 26(4), 362-385.

Analysis of the use of the hundred board by (n=4) second graders in supporting conceptual development. The board did not support the construction of concepts of ten, but did support their ability to reflect on their mathematical activity. **Lrng, Manp, PlcV (EC)**

Comiti, Claude; Grenier, Denise. (1995, June). Two Examples of "A Split Situation" in a Mathematics Class. *For the Learning of Mathematics* 15(2), 17-22.

Observations of two teachers practice in classrooms of 14-15-year-olds found that the work that really took place in the classroom was often focused on different knowledge than that which the teacher wished to convey. **Knw, Oral, Tchg (SE)**

Confrey, Jere. (1995, February). A Theory of Intellectual Development (Part 2). *For the Learning of Mathematics* 15(1), 38-48.

Vygotskian theory can support two opposing interpretations, supporting reform and undermining reform. Includes: socio-cultural perspectives, Marxist influences, role of labor, language, conceptual development, and learning and development. **Lrng, Soc, Lang (K-12)**

Confrey, Jere. (1995, June). A Theory of Intellectual Development (Part 3). *For the Learning of Mathematics* 15(2), 36-45.

Presents a theory of intellectual development in which among others: human development depends on environment; self is autonomous; diversity is anticipated; emotional intelligence is acknowledged; learning is a reciprocal activity. **Lrng, Aff (K-12)**

Confrey, Jere; Smith, Erick. (1995, January). Splitting, Covariation, and Their Role in the Development of Exponential Functions. *Journal for Research in Mathematics Education* 26(1), 66-86.

An approach to learning exponential and logarithmic functions based on a primitive multiplicative operation that is not repeated addition. Students can build a number system from splitting structures and their geometric forms. **Alg, Lrng, Tchg (SE & PS)**

Corbin, Gloria L. (1995, November). Promising Research, Programs, and Projects: Collaboration Really Works. *Teaching Children Mathematics* 2(3), 190-191.

Four schools, ten third-grade teachers, and their students (n=168) participated in a study to determine the impact of individual versus group planning and traditional vs. problem-focused curriculum on students' learning of multiplication.

Grpg, Plan, PS, Curr Lrng, M/D **(EC & TE)**

Davies, Julie; Brember, Ivy. (1995). The First and Second Mathematics Standard Assessment Tasks at Key Stage 1: A Comparison Based on a Five School Study. *Educational Review* 47(1), 3-9.

This research assessed (1) effects of the National Curriculum and national assessment procedures on (n=247) children's mathematical attainment and (2) math scores value as an indicator of math performance by seven-year olds. **Ach, Assm, Curr**, Ethn **(EC)**

deMesquita, Paul B.; Zollman, Alan. (1995). Teachers' Preferences for Academic Intervention Strategies in Mathematics: Implications for Instructional Consultation. *Journal of Educational and Psychological Consultation* 6(2), 159-174.

This study investigated (n=62) primary school teachers' preferences for three approaches to academic intervention (cognitive, behavioral, and cooperative learning) when presented with descriptions of two students experiencing difficulty. **Grpg, Plan, Tchg**, A/S, PS **(EC)**

Dengate, Bob; Lerman, Stephen. (1995, April). Learning Theory in Mathematics Education: Using the Wide Angle Lens and Not Just the Microscope. *Mathematics Education Research Journal* 7(1), 26-36.

Develops and represents diagrammatically a holistic model of theories of learning in mathematics education, including transmissive and constructivist views. **Lrng, Revw (ALL)**

Dugdale, Sharon; And Others. (1995). Technology and Algebra Curriculum Reform: Current Issues, Potential Directions, and Research Questions. *Journal of Computers in Mathematics and Science Teaching* 14(3), 325-357.

Characterizes algebra as a way of reasoning involving variables/functional relationships, generalization/modes of representation, and mathematical investigation/argument. Examines curricular goals. **Alg, Tech**, Curr, Prf, Rep **(SE & PS)**

Edwards, Laurie D. (1995). The Design and Analysis of a Mathematical Microworld. *Journal of Educational Computing Research* 12(1), 77-94.

A report on a study involving middle school students who interacted with an exploratory learning environment, or mathematical microworld, for transformation geometry. The software supports mathematical discovery and exploration. **Comp, Geom, PS**, Lrng **(MS)**

Empson, Susan B. (1995, October). Research into Practice: Using Sharing Situations to Help Children Learn Fractions. *Teaching Children Mathematics* 2(2), 110-114.

Describes a case study of a first-grade class in fractions, presents preliminary findings suggesting that students in others grades can learn fractions in similar ways, and offers ideas for action research. **Frac, Impl**, Lrng, Rsch **(EC)**

English, Lyn D.; Warren, Elizabeth, A. (1995, Fall). General Reasoning Processes and Elementary Algebraic Understanding: Implications for Initial Instruction. *Focus on Learning Problems in Mathematics* 17(4), 1-19.

An exploratory study (N=147) in Australia to investigate relationships between general reasoning process (spatial, logical, analogical, patterning), ability to solve problems, understanding of early algebraic ideas. **Alg, PS**, Ethn **(MS)**

Erickson, Dianne K. (1995, April). Preservice Mathematics and Science Teachers' Case Studies of a Diverse Population of Workers. *School Science and Mathematics* 95(4), 170-174.

Findings and reflections of 16 preservice science and mathematics teachers who conducted case studies of workers to investigate the knowledge and skills necessary for high school graduates to be successful in the workplace. **Prsv, Rsch, Soc (HS)**

Even, Ruhama; Tirosh, Dina. (1995, July). Subject-Matter Knowledge and Knowledge About Students as Sources of Teacher Presentations of the Subject-Matter. *Educational Studies in Mathematics* 29(1), 1-20.

Analyzes two aspects of teachers' planned presentations and discusses the interconnectedness of subject-matter knowledge, knowledge about students, and knowledge about ways of presenting subject matter. **Lrnr, Plan, TKnw, Ethn (SE & TE)**

Fantuzzo, John W.; Davis, Gwendolyn Y.; Ginsburg, Marika D. (1995). Effects of Parent Involvement in Isolation or in Combination with Peer Tutoring on Student Self-Concept and Mathematics Achievement. *Journal of Educational Psychology* 87(2), 272-281.

This study examined the effects of a home-based, parent involvement intervention and the reciprocal peer tutoring intervention on the self-concept and mathematics achievement of 72 at-risk fourth and fifth graders at an urban elementary school. **Ach, Aff, Soc (EL)**

Feldhusen, John F.; Jarwan, Fathi. (1995, June). Predictors of Academic Success at State-supported Residential Schools for Mathematics and Science: A Validity Study. *Educational and Psychological Measurement* 55(3), 505-512.

This research analyzed and assessed the validity of identification-selection procedures used in residential schools for talented youths. High school grades prior to admission were best and SAT scores were good predictors of success. **Ach, Assm, Gift (HS)**

Ferrari, E.; And Others. (1995, June). IL CONCETTO DI INFINITO NELL'INTUIZIONE MATEMATICA. *L'Insegnamento della Mathematica e delle Scienze Integrate* 18B(3), 211-236.

Investigated the acquisition and maturation of the infinity concept in mathematics of students aged 13-15. Found the infinity concept is learned by students only when provided with appropriate guidance. **NSns, Tchg, Ethn (SE)**

Fischbein, Efraim, And Others. (1995, July). The Concept of Irrational Numbers in High-School Students and Prospective Teachers. *Educational Studies in Mathematics* 29(1), 29-44.

Investigation of the presence and effect of intuitive obstacles to the concept of irrational number in (n=30) ninth grade, (n=32) tenth grade, and (n=29) college students found that only some students manifest genuine intuitive biases. **Blf, NSns, Ethn, Frac, Lrng (HS & PS)**

Fleener, M. Jayne. (1995). The Relationship Between Experience and Philosophical Orientation: A Comparison of Preservice and Practicing Teachers' Beliefs About Calculators. *Journal of Computers in Mathematics and Science Teaching* 14(3), 359-376.

Examines the relationship between experience and philosophical orientation by identifying 233 practicing and 78 preservice teachers' contextual frameworks related to calculator use as expressed through Habermasian interest categories.

Calc, Phil, TBlf, TAtt, Tchr (ALL & TE)

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Foltz, Carol; Overton, Willis F. (1995). Proof Construction: Adolescent Development from Inductive to Deductive Problem-Solving Strategies. *Journal of Experimental Child Psychology* 59:179-195.

Inductive and deductive approaches to the construction of problem-solving proofs were studied with 100 adolescents. A cognitive developmental progression from the inductive to a construction of proofs to a deductive approach was supported. **Lrng, PS, Prf, (SE)**

Fong, Ho-Kheong. (1995, March). Schematic Model for Categorising Children's Errors in Solving a Ratio and Proportion Problem. *Hiroshima Journal of Mathematics Education* 3, 15-29.

Illustrates the schematic approach to analyzing (n=499) errors in solving math problems. Identifies five levels of errors: no solution, using irrelevant procedure, incomplete schema with or without errors, and complete schema with errors. **DR, PS, RaPc**, Assm, Ethn **(MS)**

Forgasz, Helen J. (1995, April). Gender and the Relationship Between Affective Beliefs and Perceptions of Grade 7 Mathematics Classroom Learning Environments. *Educational Studies in Mathematics* 28(3), 219-239.

Investigations of (n=782) seventh grade students' beliefs and perceptions of classroom learning environments. Gender differences were observed in classrooms where the teacher support emerged as irrelevant. **Aff, Blf, Gend**, Ethn **(MS)**

Frid, Sandra; Malone, John. (1995, October). Negotiation of Meaning in Mathematics Classrooms: A Study of Two Year 5 Classes. *Mathematics Education Research Journal* 7(2), 132-147.

A study of the relationship between students' classroom experiences and how they construct mathematical meanings suggests that students determine meaning or correctness of math activity according to teacher and affective variables. **Lrng, Soc, TAtt**, Ethn **(EL)**

Friedman, Lynn. (1995, Spring). The Space Factor in Mathematics: Gender Differences. *Review of Educational Research* 65(1), 22-50.

Previous research has found that math skills correlate higher with verbal skills than with spatial skills. Further meta-analytic results are reported here which show math-space correlations are higher in females than in males. **Gend, Revw, Vis**, Gift **(SE)**

Fujioka, Nobukatsu; Suwannaprasert, Bunpot. (1995, July-August). Japanese Mathematics Curriculum Outcomes. *The Journal of Educational Research* 88(6), 372-377.

This study determines the perceptions of five concerned groups about the outcomes for elementary school mathematics in Japan. The outcomes included: general skills; attitude and interests; knowledge; and intellectual abilities and skills. **Att, Curr, Knw**, Ach, Ethn **(EL)**

Fuligni, Andrew J.;Eccles, Jacquelynne, S.; Barber, Bonnie L. (1995, February). The Long-term Effects of Seventh-grade Ability Grouping in Mathematics. *Journal of Early Adolescence* 15(1), 58-89.

This study examined the long-term effects of being placed in an ability-grouped math class on entry into junior high school. Data were collected from (n=1139) students at the 6th, 7th, and 10th grades. **Ach, Grpg (SE)**

Fuligni, Andrew J.; Stevenson, Harold W. (1995). Time Use and Mathematics Achievement among American, Chinese, and Japanese High School Students. *Child Development* 66(3), 830-842.

Cultural differences in the structure of adolescents' daily lives were examined by interviewing representative samples of (n=578) eleventh graders in the U.S., Taiwan, and Japan, about the amounts of time they spent in a variety of activities. **Ach, CC, Soc (HS)**

Funkhouser, Charles. (1995, May). Developing Number Sense and Basic Computational Skills in Students with Special Needs. *School Science and Mathematics* 95(5), 236-239.

Case studies investigating the effectiveness of procedures to develop number sense and basic computational skills in (n=12) learning disabled students in a K-1 classroom. All students were successful in number recognition and sums 0-5. **A/S, LD, NSns (EC)**

Galbraith, Peter. (1995, May). Connecting Research to Teaching: Mathematics as Reasoning. *Mathematics Teacher* 88(5), 412-417.

Presents research findings and teaching implications of mathematics as reasoning and students' reasoning abilities in mathematics. **Impl, PS, Prf,** Lrng, Phil **(SE)**

Garet, Michael S.; Mills, Virginia L. (1995, May). Changes in Teaching Practices: The Effects of the Curriculum and Evaluation Standards. *Mathematics Teacher* 88(5), 380-388.

Surveys of math department chairs about changes in algebra instruction in response to the NCTM Standards showed wide variation across schools. Survey questions and a bibliography of first-year algebra textbooks is included. **Alg, Tchg,** Impl **(SE)**

Garfield, Joan. (1995, Spring). Research Report: Research Papers at ICOTS 4. *Teaching Statistics* 17(1), 29-31.

Summaries of 19 papers presented at ICOT 4 (Morocco, July '94). Topics include: empirical studies on students' conceptions; teaching and learning; assessment; using computers in teaching probability and statistics; and data analysis.

Lrng, Prob, Stat, Assm, Tchg, Tech **(SE & PS)**

Gierl, Mark J.; Bisanz, Jeffrey. (1995). Anxieties and Attitudes Related to Mathematics in Grades 3 and 6. *Journal of Experimental Education* 63(2), 139-158.

This study examined students in Grades 3 and 6 on measures of mathematics anxiety, school test anxiety, and attitudes toward mathematics to determine if different forms of anxiety exist and if anxiety is related to attitude. **Anx, Att (EL)**

Gill, Alice J.; Thompson, Arlene. (1995, September). Bridging Second-Grade Children's Thinking and Mathematical Recording. *The Journal of Mathematical Behavior* 14(3), 349-62.

Multiple strategies used by second graders to solve a problem with three addends and how their teacher tries to map their thinking into the system of mathematical notation using the AFT Thinking Mathematics program. **A/S, Lrng, PS,** Rep **(EC)**

Gras, Regis; Totohasina, Andre. (1995, June). Conceptions d'eleves sur la notion de probabilite conditionnelle revelees par une methode d'analyse des donnees: Implication - similarite - correlation = Students' Conceptions on Conditional Probability Revealed by a Data Analysis Method: Implication - Similarity - Correlation. *Educational Studies in Mathematics* 28(4), 337-363.

Using a new method of data analysis (statistical implication) and a method of post-correlative treatment reve... students' preconceptions in conditional probability and makes explicit the procedures of problem solving that reflect them. **Prob, PS, Stat,** DR, Ethn **(SE)**

Gregg, Jeff. (1995, November). The Tensions and Contradictions of the School Mathematics Tradition. *Journal for Research in Mathematics Education* 26(5), 442-66.

A case study of a beginning teacher's acculturation into the school math tradition. The explanations and strategies that a teacher employs to cope with the tensions and contradictions that underlie the beliefs and practices can help to sustain it. **TBlf, Tchr (SE & TE)**

Gutstein, Eric; Romberg, Thomas A. (1995, September). Teaching Children to Add and Subtract. *The Journal of Mathematical Behavior* 14(3), 283-324.

Reviews research using diagrams, number sentences, and algorithms to help students learn to add and subtract and poses questions on the relationship of instruction to children's knowledge construction. Proposes a research agenda. **A/S, Lrng, Revw**, Rep **(EC)**

Harel, Guershon; Behr, Merlyn. (1995, March). Teachers' Solutions for Multiplicative Problems. *Hiroshima Journal of Mathematics Education* 3, 31-51.

N=32 inservice elementary teachers solved multiplicative problems. Teachers solving problems relationally reasoned in terms of ratio and proportion concepts. Teachers finding correct solutions without the concepts used trial-and-error.

Isrv, M/D, PS, Frac, RaPc, TKnw **(EL & TE)**

Hasemann, Klaus; Mansfield, Helen. (1995, July). Concept Mapping in Research on Mathematical Knowledge Development: Background, Methods, Findings and Conclusions. *Educational Studies in Mathematics* 29(1), 45-72.

Two mathematical projects involving (n=25) fourth- and (n=26) sixth-graders' concept mapping allowed monitoring of students' individual understanding over time and provided information about students' conceptual understanding. **Assm, Lrng**, Frac, Geom **(EL)**

Hativa, Nira; Cohen, Dorit. (1995, June). Self Learning of Negative Number Concepts by Lower Division Elementary Students Through Solving Computer-Provided Numerical Problems. *Educational Studies in Mathematics* 28(4), 401-431.

Two fourth-grade classes served in a study that employed computers for promoting autonomous learning processes through solving challenging problems adapted to students' aptitudes using the number line as an intuitive model. **Arth, Comp, PS**, Ethn, Lrng **(EL)**

Healy, Lulu; Pozzi, Stefano; Hoyles, Celia. (1995). Making Sense of Groups, Computers, and Mathematics. *Cognition and Instruction* 13(4), 505-523.

This article reports research designed to identify factors associated with learning mathematics in groups with Logo (N=48 aged 9-12). The findings suggested that detailed specifications of the learning goal is crucial to evaluating group work. **Comp, Grpg**, Assm, Lrng **(EL)**

Hegarty, Mary; Mayer, Richard E.; Monk, Christopher A. (1995). Comprehension of Arithmetic Word Problems: A Comparison of Successful and Unsuccessful Problem Solvers. *Journal of Educational Psychology* 87(1), 18-32.

Results of two experiments suggest that unsuccessful problem solvers base their solution plan on numbers and keywords, whereas successful problem solvers construct a model of the problem situation on which to base a solution. **Arth, PS**, Lrng, Prf **(All)**

Henderson, Ronald W., Landesman, Edward M. (1995, May-June). Effects of Thematically Integrated Mathematics Instruction on Students of Mexican Descent. *The Journal of Educational Research* 88(5), 290-300.

The effects of integrated instruction on achievement, attitudes, and motivation in math among middle school students of Mexican descent were investigated. Instruction used collaborative learning groups and hands-on activities. **Ethn, Grpg, IC**, Ach, Aff, Att **(MS)**

Hersberger, Jim. (1995, September-October). On My Mind: Cooperative Groups Can and Often Should Be Homogeneous. *Mathematics Teaching in the Middle School* 1(6), 436-438.

Discusses research on cooperative learning groups and concludes that cooperative groups should often be homogeneous. **Grpg, Impl (EL)**

Hirst, Keith; Shiu, Christine. (1995, March). Investigations in Pure Mathematics: A Constructivist Perspective. *Hiroshima Journal of Mathematics Education* 3, 1-14.

Discusses a constructivist approach in the context of undergraduate mathematics, with particular reference to pure mathematics, general aims and objectives, assessment strategies, and problems of supervision. Includes students' views. **AdvM, Assm, Lrng**, Curr, Ethn **(PS)**

House, J. D. (1995, February). The Predictive Relationship Between Academic Self-Concept, Achievement Expectancies, and Grade Performance in College Calculus. *The Journal of Social Psychology* 135(1), 111-112.

(N=218) underprepared freshmen were studied to explore the predictive relationship between student attitudes and achievement in college mathematics. Results indicated that attitudes did significantly predict achievement in calculus. **Ach, Att, Cals**, Aff **(PS)**

House, J. Daniel. (1995, March-April). Noncognitive Predictors of Achievement in Introductory College Mathematics. *Journal of College Student Development* 36(2), 171-181.

This study investigated the predictive relationship between non cognitive variables, high school math course work, and admissions test scores and achievement in college math for 470 female and 488 male undergrads. **Ach, Aff, Gend (PS)**

Jaime, Adela; Gutierrez, Angel. (1995, October). Connecting Research to Teaching: Guidelines for Teaching Plane Isometries in Secondary School. *Mathematics Teacher* 88(7), 591-97.

Results from research aimed to design and experiment with a set of units for teaching plane isometries in grades 3-12 and applies the van Hiele model of geometric reasoning to isometries. **Geom, Impl, Tchg**, Lrng **(K-12)**

Jiang, Zhonghong; Eggleton, Patrick. (1995, April). A Brief Comparison of the U.S. and Chinese Middle School Mathematics Programs. *School Science and Mathematics* 95(4), 187-94.

U.S. schools had lower intensity because of extensive drill, repetition of content, lack of challenging problem solving, lower expectations, and ability grouping. China utilizes challenging problem solving, and high expectations and values. **CC, Curr**, PS **(MS)**

Jones, Doug. (1995, March). Connecting Research to Teaching: Making the Transition: Tensions in Becoming a (Better) Mathematics Teacher. *Mathematics Teacher* 88(3) 230-34.

Discusses research on the tensions in becoming a better mathematics teacher, including: perspectives on the nature of mathematics, conceptual and procedural knowledge, and managing competing responsibilities. **Lrng, Isrv, TKnw**, Curr, Impl, Phil **(SE & TE)**

Jones, Jennifer; Young, Deidra J. (1995). Perceptions of the Relevance of Mathematics and Science: An Australian Study. *Research in Science Education* 25(1) 3-18.

Investigates students' perceptions and attitudes towards math and science and their perceived reasons for not performing well. Boys have more favorable attitudes and gender differences increased as students got older. **Att, Gend, Soc**, Ach, Ethn **(HS)**

Joram, Elana; And Others. (1995, July). Numeracy as Cultural Practice: An Examination of Numbers in Magazines for Children, Teenagers, and Adults. *Journal for Research in Mathematics Education* 26(4), 346-361.

Analysis of characteristics of rational numbers in magazines written for children, teenagers, and adults indicated that difficult math concepts that appear in the media are much more prevalent in adults' magazines than in the others. **Frac, NSns, Soc (ALL)**

Jordan, Nancy C. (1995), Winter). Clinical Assessment of Early Mathematics Disabilities: Adding Up the Research Findings. *Learning Disabilities Research and Practice* 10(1), 59-69.

This article proposes a developmental approach to the assessment of mathematics disabilities in young children. A case vignette of an 8-year-old girl with mathematical difficulties illustrates these ideas. **Assm, LD**, Arth **(EC)**

Jordan, Nancy C.; Levine, Susan C.; Huttenlocher, Janellen. (1995, January). Calculation Abilities in Young Children with Different Patterns of Cognitive Functioning. *Journal of Learning Disabilities* 28(1), 53-64.

This study examined the arithmetic calculation abilities of kindergarten and first graders (N=108) with different patterns of cognitive functioning. Categorizations of students included, spatial and language abilities and delayed development. **Lang, LD, Vis**, Arth, PS **(EC)**

Kamii, Constance; Warrington, Mary Ann. (1995, March). Division with Fractions: A Piagetian, Constructivist Approach. *Hiroshima Journal of Mathematics Education* 3, 53-62.

Encourage fifth- and sixth-graders to invent their own ways of solving division problems with fractions. Emphasizes the importance of social interaction and explains the importance of debate and verification for construction of knowledge. **Frac, Lrng, M/D**, Soc, Tchg **(MS)**

Kern, Stephanie; Schumacker, Randall E. (1995). Identification of a Mathematics Core in Vocational Programs at 2-Year Colleges. *Community College Journal of Research and Practice* 19(4), 307-318.

Surveys of (n=57) faculty members across 26 vocational programs identified a core of 38 math competencies needed by students to be successful in vocational program areas. Areas include: calculations with all rationals and measurement. **Arth, Curr, Meas**, Frac **(PS)**

Kitz, William R.; Thorpe, Harold W. (1995, September). A Comparison of the Effectiveness of Videodisc and Traditional Algebra Instruction for College-age Students with Learning Disabilities. *Remedial and Special Education* 16(5), 295-306.

This study compares the effectiveness of a videodisc program and a traditional text-based program with 13 precollege students in each group. Performance on two posttest measures and first college algebra course grades are analyzed. **Alg, LD, Tech**, Ach **(PS)**

Knapp, Nancy F.; Peterson, Penelope L. (1995, January). Teachers' Interpretations of "CGI" After Four Years: Meanings and Practices. *Journal for Research in Mathematics Education* 26(1), 40-65.

N=20 primary teachers in inservice workshops on Cognitively Guided Instruction (CGI) and were interviewed. Three patterns of CGI use: mainstay, supplement, and decreasingly seemed related to their beliefs about math, learning, and CGI itself.

Isrv, TBlf, Tchg, Lrng **(EC & TE)**

Knight, Randall D. (1995, February). Vector Knowledge of Beginning Physics Students. *The Physics Teacher* 33(2) 74-78.

A Vector Knowledge Test was designed to see if beginning physics students possess the minimal basic knowledge of vectors that will allow them to study Newtonian mechanics. Appendix contains the actual test. **Assm, IC, Knw (PS)**

Kouba, Vicky L.; Franklin, Kathy. (1995, May). Research into Practice: Multiplication and Division: Sense Making and Meaning. *Teaching Children Mathematics* 1(9), 574-577.

Discusses mathematics education research on multiplication and division which implies that instruction should emphasize development of a conceptual basis rather than memorization of tables and rules. Presents action research ideas. **Impl, Lrng, M/D**, Tchg **(EC)**

Kupermintz, Haggai; and others. (1995, Fall). Enhancing the Validity and Usefulness of Large-Scale Educational Assessments: I. NELS:88 Mathematics Achievement. *American Educational Research Journal* 32(3), 525-554.

This study demonstrates that the validity and usefulness of math achievements tests can be improved by defining psychologically meaningful subscores that yield differential relations with student, teacher, and school variables. **Ach, Rsch**, Knw, PS **(SE)**

LeBlanc, John F.; And Others. (1995, April). A Tutorial Program: Collaboration Between Preservice and Inservice Teachers. *School Science and Mathematics* 95(4), 175-77.

The Mathematics Tutorial Program assigns preservice teachers to inservice elementary teachers to tutor students in math using a hands-on approach. Teachers commented on students' improved self-esteem and confidence in math. **Aff, Manp, Prsv**, Tchg **(EL & TE)**

Leder, Gilah C.; Taylor, Peter. (1995, October). Achievement in the Australian Mathematics Competition: A Question of Age? *Mathematics Education Research Journal* 7(2), 95-110.

Australian Mathematics Competition was used to examine performance in mathematics of students who are young for their grade. There were more males than females in the older group but no gender differences in the younger group. **Ach, Gend, Gift**, Ethn **(HS)**

Leeson, Neville. (1995, April). Performance of Sixth-Graders in the Australian Primary Schools Mathematics Competition: Gender and Other Factors. *Mathematics Education Research Journal* 7(1), 37-49.

Reports the performance of grade 6 students in the Australian Primary Schools Mathematics Competition for 1990 to 1992 and provides general comparisons across states. Results showed that overall, boys outperformed girls. **Ach, Gend**, Ethn **(MS)**

Lefton, Lew E.; Steinhart, Enid M. (1995, March). Calculus & Mathematica: An End-User's Point of View. *PRIMUS* 5(1), 80-96.

Presents an objective assessment of student performance based on a uniform final exam. Includes a summary of student perceptions drawn from responses to a survey and an analysis of the strengths and weaknesses of the courseware. **Assm, Cals, Tech**, Ach, Aff, Blf **(PS)**

Lemaire, Patrick; Siegler, Robert S. (1995, March). Four Aspects of Strategic Change: Contributions to Children's Learning of Multiplication. *Journal of Experimental Psychology: General* 124(1), 83-97.

This study reports a longitudinal investigation of French second-graders acquisition of single-digit multiplication skill. Speed, accuracy, and strategy use were assessed three times within the year when children learned multiplication. **Ach, M/D**, Ethn **(EC)**

Leron, Uri; And Others. (1995, September). Learning Group Isomorphism: A Crossroads of Many Concepts. *Educational Studies in Mathematics* 29(2), 153-74.

Undergraduates in an abstract algebra course were interviewed to see how they learned the concept of isomorphism. Students used step-by-step procedures, exhibited personification in their language, and chose to use simpler properties. **AdvM, Ethn, Lrng**, Lang **(PS)**

Lord, Thomas R.; Rupert, Joy L. (1995, Summer). Visual-Spatial Aptitude in Elementary Education Majors in Science and Math Tracks. *Journal of Elementary Science Education* 7(2), 47-58.

Two measures of spatial aptitude were administered to hundreds of elementary education majors. Men outperformed women and those specializing in science and math scored significantly higher than non science-math peers. **Gend, Prsv, Vis**, Ach **(EL & TE)**

Lynch, Deirdre C.; Cuva, Anthony J. (1995, Summer). Stimulus Equivalence Instruction of Fraction-Decimal Relations. *Journal of Applied Behavior Analysis* 28(2), 115-126.

This study examined (n=7) fifth and sixth graders who demonstrated difficulty in fraction and decimal tasks. Technology controlled instruction on fraction ratio and decimal relations included matching symbols to pictorial representations.

Comp, Decm, Frac, Eqv, Rep, Vis **(MS)**

Ma, Xin. (1995, Fall). Factor Structures of Attitudes Toward Mathematics Among High, Average, and Low Achieving High School Senior Students in theDominican Republic. *Focus on Learning Problems in Mathematics* 17(4), 20-41.

Students (N=1082) were divided into three groups based on achievement on a wide scale assessment. Attitude scales were factor analyzed for the three achievement groups. All groups see mathematics as important to their future. **Ach, Att, Ethn (HS)**

MacGregor, Mollie; Stacey, Kaye. (1995, April). The Effect of Different Approaches to Algebra on Students' Perceptions of Functional Relationships. *Mathematics Education Research Journal* 7(1), 69-85.

(N=1200) students in Years 7 to 10 were tested on recognizing, using, and describing rules relating two variables. Fourteen interviewed students saw a variety of patterns, many were not helpful. Outlines steps in moving from table to rule. **Alg, Rep**, Ethn **(SE)**

Mack, Nancy K. (1995, November). Confounding Whole-Number and Fraction Concepts When Building on Informal Knowledge. *Journal for Research in Mathematics Education* 26(5), 422-41.

Four third-grade and three fourth-grade students received individualized instruction on addition and subtraction of fractions. Students overgeneralized the meanings of symbolic representations for whole numbers and fractions. **Frac, Lrng, Whol**, Knw, Rep **(EL)**

Macmillan, Agnes. (1995, October). Children Thinking Mathematically Beyond Authoritative Identities. *Mathematics Education Research Journal* 7(2), 111-131.

Math interactions and developing attitudes of children in transition from preschool to school. Construction play was analyzed to suggest a model of autonomous learning. Access to social relations was linked to access of meanings. **Att, Soc, Lrng (EC)**

Madsen, Anne, L.; Smith, Patricia; Lamer, Perry. (1995, Fall). Does Conceptually Oriented Instruction Enhance Computational Competence? *Focus on Learning Problems in Mathematics* 17(4), 42-64.

Students taught conceptually, as opposed to reviewing computation, became more confident in trying new approaches (manupulatives, illustrations, writing, discussion), and their ability to solve computational problems was increased. **Comm, Lrng, PS, Arth, Att (MS)**

Madsen, Richard W. (1995, Autumn). Secondary Students' Concepts of Probability. *Teaching Statistics* 17(3), 90-93.

Surveys of (n=200 in five schools) secondary school students' preconceptions of probability found that, although these students had had no formal instruction in probability, they did have some notion of the topic. Includes survey. **Lrng, Prob (SE)**

Manger, Terje. (1995, September). Gender Differences in Mathematical Achievement at the Norwegian Elementary-School Level. *Scandinavian Journal of Educational Research* 39(3), 257-269.

This study investigated the relationship between gender and math achievement with Norwegian third graders (440 girls, 484 boys). The achievement included problems in numeracy, arithmetic, geometry, and word problems. **Ach, Gend, Ethn (EC)**

Markovits, Henry; Dumas, Claude; Maltat, Nicole. (1995). Understanding Transitivity of a Spatial Relationship: A Developmental Analysis. *Journal of Experimental Child Psychology* 59, 124-141.

An extension of previous research where sets of blocks were used to understand transitive inferences (higher than). In this study contradictory information was provided to subjects via positions of representations of the A and B of A>B>C. **Lrng, Rep, Vis, Manp (EC)**

Mason, Marguerite M. (1995, Summer). Geometric Knowledge in a Deaf Classroom: An Exploratory Study. *Focus on Learning Problems in Mathematics* 17(3), 57-69.

This study examines geometric understanding and misconceptions among a deaf teacher and five deaf students, ages 7-11. During an eight-day geometry unit, students progressed to a van Hiele Level Two, and the teacher operated at Level Three. **DR, Geom, LD (ALL)**

Mayer, Richard E.; Sims, Valerie; Tajika, Hidetsugu. (1995, Summer). A Comparison of How Textbooks Teach Mathematical Problem Solving in Japan and the United States. *American Educational Research Journal* 32(2), 443-460.

A report comparing corresponding lessons on addition and subtraction of integers in three seventh-grade Japanese textbooks with four U.S. textbooks. The results discuss quantity and detail of examples, relevant illustrations, and exercises. **CC, Matl, PS, A/S, Int (MS)**

McDevitt, Teresa M.; And Others. (1995, September). Evaluating Prospective Elementary Teachers' Understanding of Science and Mathematics in a Model Preservice Program. *Journal of Research in Science Teaching* 32(7), 749-775.

Compared students in a model preservice program to other students taking similar courses on their conceptual understandings of science and math, their investigative proficiencies, and their beliefs about effective methods of teaching. **Prsv, TBlf, TKnw (EL & TE)**

McIntosh, Alistair, And Others. (1995, October). Mental Computation Performance in Australia, Japan and the United States. *Educational Studies in Mathematics* 29(3), 237-58.

The performance of nearly 2000 students in grades 2 through 9 on a variety of mental computation tasks using visual and oral presentation found a wide variation in performance within the sample of each country at each grade level. **Arth, CC (K-12)**

McNamara, Danielle S. (1995). Effects of Prior Knowledge on the Generation Advantage: Calculators verses Calculation to Learn Simple Multiplication. *Journal of Educational Psychology* 87(2), 307-318.

Elementary school children learned simple multiplication by generating (computing the answers) or reading (answers from a calculator display). Children were given a pretest, training, a posttest, and a retention test after 2 weeks. **Ach, Calc, M/D (EL)**

McNeal, Betsy. (1995, June). Learning Not to Think in a Textbook-Based Mathematics Class. *The Journal of Mathematical Behavior* 14(2), 205-234.

Anthropological and cognitive perspectives on one child's learning of the standard addition algorithm in second and third grade. The student abandoned his self-generated computational algorithms in favor of less understood procedures. **A/S, Lrng (EC)**

Meira, Luciano. (1995). The Microevolution of Mathematical Representations in Children's Activity. *Cognition and Instruction* 13(2), 269-313.

Children's (N=9) design of mathematical representations on paper while solving problems is discussed. Knowledge of representations emerges during interactions with social and material settings. Drawings are constructed and transformed. **Knw, PS, Rep, Ethn (MS)**

Menon, Ramakrishnan. (1995, Winter). The Role of Context in Student-constructed Questions. *Focus on Learning Problems in Mathematics* 17(1), 25-33.

Analysis of questions involving fractions & decimals constructed by (n=27) fifth- and sixth-graders revealed more experience- and interest-based questions rather than textbook-type word problems which tended to be multi-step problems. **Decm, Frac, PS (MS)**

Middleton, James A. (1995, May). A Study of Intrinsic Motivation in the Mathematics Classroom: A Personal Constructs Approach. *Journal for Research in Mathematics Education* 26(3), 254-279.

Examines the relationship between (n=6) teachers' and (n=30) students' personal constructs with regard to intrinsic motivation in the mathematics classroom. Most of the teachers had little notion of the motivational beliefs of their students. **Aff, Blf, Tchr (MS)**

Miller, April D.; Hall, Susan W.; Heward, William L. (1995, September). Effects of Sequential 1-minute Time Trials with and without Inter-trial Feedback and Self-correlation on General and Special Education Students' Fluency with Math Facts. *Journal of Behavioral Education* 5(3), 319-345.

This study measured the effects of 2 procedures for implementing 1-minute time trials on the rate and accuracy of answers to math facts for 23 first graders and 11 9- to 12-year-old special education students. **Ach, A/S, Arth, LD, Lrng (EC)**

Miller, Kevin F.; and others. (1995, January). Preschool Origins of Cross-national Differences in Mathematical Competence: The Role of Number-naming Systems. *Psychological Science* 6(1), 56-60.

This study investigated differences in number learning that may depend on language spoken in 99 Chinese and 98 US 3- to 5-year-old children in counting-related tasks.

CC, Lang, NSns (EC)

Mokros, Jan; Russell, Susan Jo. (1995, January). Children's Concepts of Average and Representativeness. *Journal for Research in Mathematics Education* 26(1), 20-39.

N=21 fourth, sixth, and eighth graders constructed their own notion of average and representativeness. Basic constructions used were: mode, an algorithmic procedure, what is reasonable, midpoint, and a mathematical point of balance. **Lrng, Rep, Stat, PS (EL)**

Montague, Marjorie. (1995, Spring). Cognitive Instruction and Mathematics: Implications for Students with Learning Disorders. *Focus on Learning Problems in Mathematics* 17(2), 39-49.

Discussion of research efforts focusing on understanding students' attributes and validating instructional programs to improve math learning. Includes instructional recommendations to assist teachers in enhancing math learning for all students. **LD, Lrnr, Tchg, Lrng (K-12)**

Moreira, Candida; Noss, Richard. (1995, March). Understanding Teachers' Attitudes to Change in a LogoMathematics Environment. *Educational Studies in Mathematics* 28(2), 155-76.

Describes and analyzes attitudes of two Portuguese elementary teachers towards math, math teaching, and use of computers in instruction after a Logo computer course. Both changed their attitude but only one implemented her ideas. **Comp, TAtt, Ethn (EL & TE)**

Morris, Anne. (1995, Summer). Meaningful Instruction in Fractions: Implementing a Theory in a Low-Achieving Mathematics Classroom. *Focus on Learning Problems in Mathematics* 17(3), 16-40.

An eight-week teaching experiment involved (N=19) sixth-grade students in instruction and interviews. Students were able to connect written fraction symbols to a variety of appropriate referents. Use of semantic processes was related to correct performance. **Frac, Lrng (MS)**

Mousavi, Seyed Y.; Low, Renae; Sweller, John. (1995). Reducing Cognitive Load by Mixing Auditory and Visual Presentation Modes. *Journal of Educational Psychology* 87(2), 319-334.

The article reports findings on the use of a partly auditory & partly visual mode of presentation for geometry examples (6 experiments). The logic was based on the split-attention effect and the effect of presentation modality on working memory. **Geom, Lrng, Vis, Ethn (EL)**

Mulryan, Catherine M. (1995, March). Fifth and Sixth Graders' Involvement and Participation in Cooperative Small Groups in Mathematics. *The Elementary School Journal* 95(4), 297-310.

This study examined responses from (n=48) fifth and sixth graders. Findings showed that student generally spent more time on-task, especially more quality time, than in the whole-class setting and were more active participants in groups. **Grpg, Tchg, Ach, Gend (MS)**

Mura, Roberta. (1995, June). Images of Mathematics Held by University Teachers of Mathematics Education. *Educational Studies in Mathematics* 28(4), 385-399.

Presents data about views of mathematics collected through a national survey of (n=63) teachers of math education in Canadian universities. Results are compared with a previous survey of (n=103) university teachers of mathematical sciences. **Phil, TBlf, Tchr (PS)**

Murrell, Peter C. (1995, Fall). In Search of Responsive Teaching for African American Males: An Investigation of Students' Experiences of Middle School Mathematics Curriculum. *Journal of Negro Education* 63(4), 556-569.

This study examined math teaching methods and analyzed the discourse patterns and speech events that evoke qualitative differences in learning experiences of 12 sixth- and seventh-grade African American males with low math ability. **Ethn, Oral, Tchg, Lang (MS)**

Naglieri, Jack A.; Gottling, Suzanne H. (1995). A Study of Planning and Mathematics Instruction for Students with Learning Disabilities. *Psychological Reports* 76(3), 1343-1354.

A study to extend research in training the use of cognitive strategies in mathematical computation for four students with learning disabilities. All students improved on addition, but only two improved on multiplication. **Ach, LD, Plan, Arth (EL)**

Newman, Richard S.; Schwager, Mahna T. (1995, Summer). Students' Help Seeking During Problem Solving: Effects of Grade, Goal, and Prior Achievement. *American Educational Research Journal* 32(2), 352-76.

This study investigated the types of help that (n=118) third and sixth graders requested while solving inductive reasoning problems under the tutelage of an adult. Students were classified as high, medium, and low math achievers. **Ach, Aff, PS (EL)**

Nguyen-Xuan, Anh; Nicaud, Jean-Francois; Gelis, Jean-Michel. (1995, May). An Experiment in Learning Algebra with an Intelligent Learning Environment. *Instructional Science* 23(1-3), 25-45.

This study examined 46 French secondary school students learning to solve problems of polynomial factorization by interacting with an intelligent learning environment.

Alg, Comp, PS, Ethn, Lrng **(SE)**

Nicholls, Andrea L. (1995). Influence of Visual Projection on Young Children's Depictions of Object Proportions. *Journal of Experimental Child Psychology* 60, 304-326.

Cards of equal or one of half-width size were used for (N=63) students ages 5-8 with objects drawn or rotated. Findings after children drew the objects suggest that 5- and 6-year-olds are more reluctant to change the actual object proportions. **Lrng, Vis**, Geom **(EC)**

Nolen, Susan B. (1995). Effects of a Visible Author in Statistical Texts. *Journal of Educational Psychology* 87(1), 47-65.

The effects of a visible author (reveals attitude and personality) on women's experience reading statistical texts were examined among 47 female college students. Results discuss comprehension, motivation, and affective response. **Aff, Gend, Stat (PS)**

Norwood, Karen S. (1995, September). The Effects of the Use of Problem Solving and Cooperative Learning on the Mathematics Achievement of Underprepared College Freshmen. *PRIMUS* 5(3), 229-252.

Underprepared freshmen (212 in control; 178 in experimental) were monitored through one year of college mathematics in a study that showed cooperative learning and problem solving had a significant effect on mathematical success. **Ach, Grpg, PS (PS)**

Odell, Patricia; Schumacher, Phyllis. (1995, March). Placement in First-Year College Mathematics Courses Using Scores in SAT-Math and a Test of Algebra Skills. *PRIMUS* 5(1), 61-72.

Correlations of a test of algebra skills, SAT math scores, and final math grades. Most college freshmen (n=146) would be better placed in math courses by using the test of algebra skills and SAT scores than by using SAT scores alone. **Alg, Assm, DR**, Ach **(PS)**

Oliver, John; Glencross, Michael J. (1995, June). An Evaluation of Teaching Techniques used in Transkei, South Africa to Assess Competency in Primary Mathematics. *Psychological Reports* 76(3), 747-754.

This study evaluates the suitability of the curriculum in Transkei in enabling students in Grades 5 and 6 to achieve competency in mathematics. Teachers relied largely on closed-type teaching techniques and textbooks. **Ach, Curr, Tchg**, Assm, Ethn, PS **(EL)**

Olszewski-Kubilius, Paula; Yasumoto, Jeff. (1995, Spring). Factors Affecting the Academic Choices of Academically Talented Middle School Students. *Journal for the Education of the Gifted* 18(3), 298-318.

This study examines factors, including: gender, race, ability, educational experience, interest, and parental attitudes in influencing the course choices (math, science, and verbal oriented) of (n=656) 11-16-year-old gifted students. The importance parents place on science and math had the most influence. **Ethn, Gend, Gift**, Ach, Aff, Att **(K-12)**

Onwuegbuzie, Anthony J.; Seaman, Michael A. (1995). The Effect of Time Constraints and Statistics Test Anxiety on Test Performance in a Statistics Course. *Journal of Experimental Education* 63(2), 115-124.

The performance of graduate students who completed a statistics examination under time limits was compared with that of students under no time limits (N=26). Both low- and high-anxious students performed better under the untimed condition. **Ach, Anx, Stat**, Att **(PS)**

Orton, Robert E. (1995, May). Ockham's Razor and Plato's Beard. *Journal for Research in Mathematics Education* 26(3), 204-229.

Response to an earlier article argues that the original misinterprets the post epistemological perspective, confuses ontological and epistemological issues, and mistakes the pragmatic force of the constructivist argument. **Lrng, Phil (ALL)**

Orton, Robert E.; And Others. (1995, March). Logical and Psychological Aspects of Rational Number Pedagogical Reasoning. *Hiroshima Journal of Mathematics Education* 3, 63-75.

Synthesizes research on content knowledge of rational numbers, the learning of rational number order and equivalence concepts, and teachers' pedagogical reasoning about these concepts. **Frac, Prf, Revw**, Eqv, Ethn, TKnw **(K-12)**

Pajares, Frank; Miller, David. (1995, April). Mathematics Self-efficacy and Mathematics Performances: The Need for Specificity of Assessment. *Journal of Counseling Psychology* 42(2), 190-198.

In this study, 391 students were asked to provide three types of mathematics self-efficacy judgments: confidence to solve mathematics problems, confidence to succeed in math-related courses and confidence to perform math-related tasks. **Aff, Blf**, Ach **(PS)**

Parker, Melanie; Leinhardt, Gaea. (1995, Winter). Percent: A Privileged Proportion. *Review of Educational Research* 65(4), 421-481.

Why is percent so hard to learn? Explaining the history of the percent concept, specifying what percent is, and understanding the privileged language of percent are all part of the answer — leading to speculation about how to teach it. **Lrng, RaPc, Revw**, CC, Impl **(ALL)**

Phillips, Richard J.; And Others. (1995, March). Evolving Strategies for Using Interactive Video Resources in Mathematics Classrooms. *Educational Studies in Mathematics* 28(2), 133-154.

Ways in which interactive video (IV) is used in mathematics classrooms in England are considered. The three modules (of 17) selected and used most by (n=14) teachers are discussed. IV use seems to put greater emphasis on process skills. **Tech**, Ethn, Tchg **(MS)**

Putt, Ian John. (1995, Summer). Preservice Teachers Ordering of Decimal Numbers: When More Is Smaller and Less is Larger. *Focus on Learning Problems in Mathematics* 17(3), 1-15.

Preservice elementary teachers in Queensland were asked to order five decimal fractions. Ten response patterns and misconceptions, provoked the researcher to conduct interviews, elicit written explanations and repeat the study in the U.S. **CC, Decm, Prsv**, DR **(EL & TE)**

Qin, Zhiming; Johnson, David W.; Johnson, Roger T. (1995, Summer). Cooperative versus Competitive Efforts and Problem Solving. *Review of Educational Research* 65(2), 129-143.

A study of cooperative versus competitive learning. Forty-six studies (1929-1993) were examined and classified in four categories according to problem type. The 63 relevant findings that resulted were subjected to a meta-analysis. **Grpg, PS, Revw**, Ach **(ALL)**

Rabinowitz, Mitchell; Woolley, Kenneth E. (1995). Much Ado About Nothing: The Relation Among Computational Skill, Arithmetic Word Problem Comprehension, and Limited Attentional Resources. *Cognition and Instruction* 13(1), 51-71.

Two experiments were used to examine the possible interaction of problem comprehension and computational processes as students solve word problems. Results confirmed that problem size and problem type determine reaction times. **A/S, Arth, PS (EL)**

Ravaglia, Taymond; Suppes, Patrick; Stillinger, Constance. (1995, Winter). Computer-based Mathematics and Physics for Gifted Students. *Gifted Child Quarterly* 39(1), 7-13.

The progress of three groups of Grade 7-12 students who took advanced placement level calculus or physics courses in an education program for the gifted was examined. Attrition was low and gender differences were not apparent. **Cals, Gend, Gift**, Ach, Comp **(SE)**

Reys, Robert E.; And Others. (1995, July). Mental Computation Performance and Strategy Use of Japanese Students in Grades 2, 4, 6, and 8. *Journal for Research in Mathematics Education* 26(4), 304-326.

Assessed attitude, computational preferences, and mental computational performance of 176, 187, 186, and 206 Japanese students in grades 2, 4, 6, and 8, respectively. Visual modes of presentation increased performance levels. **Arth, Att, Ethn**, PS, Rep **(EL)**

Rickard, Anthony. (1995). Teaching with Problem-oriented Curricula: A Case Study of Middle-School Mathematics Instruction. *The Journal of Experimental Education* 64(1), 5-26.

An experienced teacher is profiled in this case study which found that problem-oriented mathematics curriculum can help teachers offer opportunities for students to make substantive mathematical connections. **Curr, PS, Tchg (MS)**

Robert, Aline. (1995, January). Analyses des discours non strictement mathematiques accompagnant des cours de mathematiques [Analysis of Not Strictly Mathematical Discourse in Mathematics Classes]. *Educational Studies in Mathematics, 28(1)* 73-86.

Examines discourse that teachers might adopt in a mathematics class and presents three major functions of such discourse: communication; structuring and labeling; and reflection. Develops lines for further inquiry. **Oral, Rsch, Tchg (SE)**

Robinson, G. Edith; Bartlett, Karen T. (1995, September). Research into Practice: Assessing Mathematical Learning. *Teaching Children Mathematics* 2(1), 24-27.

Discusses the use of assessment to guide instruction using individual interviews, good questioning techniques, observations, and student portfolios. **Assm, Impl, Tchg (EC)**

Ross, John A. (1995, November). Effects of Feedback on Student Behavior in Cooperative Learning Groups in a Grade 7 Math Class. *The Elementary School Journal* 96(2), 125-143.

Grade 7 students (N=18) worked in cooperative groups and were given transcripts to appraise their processes. Further interaction revealed increases in frequency and quality of help, student attitudes, and self-efficacy. **Att, Grpg (MS)**

Rudnitsky, Al; And Others. (1995, November). Learning to Solve Addition and Subtraction Word Problems Through a Structure-Plus-Writing Approach. *Journal for Research in Mathematics Education* 26(5), 467-86.

Third- and fourth-grade students (n=401) were taught problem solving through: structure-plus-writing; heuristics; or no explicit instruction. Structure-plus-writing outperformed the heuristics group. Includes sample student-authored problems. **A/S, PS, Writ (EC)**

Ruthven, Kenneth. (1995, Winter). Pupils' Views of Number Work and Calculators. *Educational Research* 37(3), 229-237.

This study examines pupils' representations of number work and calculators, and their dispositions towards them, as they transfer from primary to secondary education. Includes: attitudes and beliefs; also, gender and school differences.

Att, Blf, Calc, Arth, Gend, Soc (K-12)

Saenz-Ludlow, Adalira. (1995, March). Ann's Fraction Schemes. *Educational Studies in Mathematics* 28(2), 101-132.

This longitudinal case-study of a constructivist teaching experiment analyzes one third-grader's way of operating while solving fraction tasks. The evolution of her fraction schemes was the product of cognitive activity and teacher interaction. **Frac, Lrng, Lrnr, Oral (EC)**

Sakamoto, Miki. (1995, June). Determinants of Performance in Arithmetic Word Problems Involving Fractions. *Japanese Journal of Educational Psychology* 43(2), 55-64.

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This study examined factors influencing word problem solutions involving fractions (by n=210 sixth graders) that required four problem-solving subprocesses: translation, integration, planning, and execution. **Arth**, **Frac**, **PS**, Ethn **(MS)**

Satake, Eiki; Amato, Philip P. (1995, December). Mathematics Anxiety and Achievement among Japanese Elementary School Students. *Educational and Psychological Measurement* 55(6), 1000-1007.

This study focused on the incidence, correlates, and effects of mathematics anxiety among 154 fifth- and sixth-grade Japanese children. Four dimensions of anxiety were related to achievement, gender, and class. **Ach**, **Anx**, **CC**, Ethn, Gend **(MS)**

Saul, Mark. (1995, June). "The Nourishment is Palatable": A Teacher's View of Research in Mathematics Education. *The Journal of Mathematical Behavior* 14(2), 165-168.

Teacher perspective of math education research. Includes: discussion of clinical interviews, understanding student understandings, scientific methodology, research describing practice, and teachers in charge of their own profession. **Lrng**, **Rsch**, Assm, Tchg **(K-12 & TE)**

Schau, Candace; Stevens, Joseph; Dauphinee, Thomas L.; del Vecchio, Ann. (1995, October). The Development and Validation of the Survey of Attitudes Toward Statistics. *Educational and Psychological Measurement* 55(5), 868-875.

The Survey of Attitudes Toward Statistics (SATS) was developed along the dimensions of affect, cognitive competence, value, and difficulty. A significant positive correlation with Wise's Attitudes Toward Statistics scale was found. **Aff**, **Stat**, Rsch **(PS)**

Schnetele, Ulrich; Csikszentmihalyi, Mihaly. (1995, March). Motivation and Ability as Factors in Mathematics Experience and Achievement. *Journal for Research in Mathematics Education* 26(2), 163-181.

Relationships among interest, motivation, achievement, quality of experience, and ability, among (n=108) 9th and 10th graders were studied. Quality of experience was related more to interest than ability (related to achievement). **Ach**, **Aff** **(HS)**

Schmidt, Siegbert; Weiser, Werner. (1995, January). Semantic Structures of One-Step Word Problems Involving Multiplication or Division. *Educational Studies in Mathematics* 28(1), 55-72.

Proposes a four-category classification of semantic structures of one-step word problems involving multiplication and division: forming the n-th multiple, combinatorial multiplication, composition of operators, & multiplication by formula. **M/D**, **PS**, Arth **(EL)**

Schwarz, Baruch; Dreyfus, Tommy. (1995, October). New Actions Upon Old Objects: A New Ontological Perspective on Functions. *Educational Studies in Mathematics* 29(3), 259-291.

A computer microworld uses graphical, tabular, and algebraic representations to influence conceptions of function. A majority of students were able to cope with partial data and recognize invariants within and between representations. **Cals**, **Comp**, **Rep**, Lrng **(PS)**

Selden, John; Selden, Annie. (1995, September). Unpacking the Logic of Mathematical Statements. *Educational Studies in Mathematics* 29(2), 123-151.

Investigated (n=61) undergraduates' ability to translate mathematical statements into the language of predicate calculus in an introduction to proofs and mathematical reasoning. Students were unable to construct or validate proofs. **Prf**, **Rep**, AdvM **(PS)**

Seymour, Elaine. (1995, July). The Loss of Women from Science, Mathematics, and Engineering Undergraduate Majors: An Explanatory Account. *Science Education* 79(4), 437-473.

This study examines loss of high ability women in a three-year, ethnographic study of factors contributing to the high undergraduate attrition rates among (n=460) men and women of different ethnicities on seven campuses. **Ethn, Gend, Soc, Att (PS)**

Shah, Priti; Carpenter, Patricia A. (1995). Conceptual Limitations in Comprehending Line Graphs. *Journal of Experimental Psychology: General* 124(1), 43-61.

This article examines the conceptual limitations that influence a viewer's mental representation of a data set of three variables. Viewers represent x-y relations and z-y relations differently. Viewers seldom formed an integrated 3-D representation. **Alg, Rep, Vis (SE & PS)**

Shannon, Ann; Zawojewski, Judith S. (1995, December). Connecting Research to Teaching: Mathematics Performance Assessment: A New Game for Students. *Mathematics Teacher* 88 (9), 752-757.

Reviews research findings on students' understandings about school mathematics and assessment and explores students' work on, and perceptions of, different types of assessment tasks. **Assm, Bif, Revw (SE)**

Shashaani, Lily. (1995, May-June). Gender Differences in Mathematics Experience and Attitude and Their Relation to Computer Attitude. *Educational Technology* 35(3), 32-38.

This study examines the extent to which experience with and attitudes toward mathematics differ for males and females. The study was also concerned about the association between math attitudes and computer attitudes of adolescents. **Att, Comp, Gend (HS)**

Shaughnessy, Michael F., and others. (1995, December). Prediction of Success in College Calculus: Personality, Scholastic Aptitude Test, and Screening Scores. *Psychological Reports* 77(3), 1360-1362.

This study explored the relationship between Scholastic Aptitude Test scores, personality scores, and screening test scores of 87 students to predict success in college calculus. The results are discussed and implications reviewed. **Ach, Aff, Cals (PS)**

Shiah, Rwey-Lin; Mastropieri, Margo A.; Scruggs, Thomas E. (1995). The Effects of Computer-Assisted Instruction on the Mathematical Problem Solving of Students with Learning Disabilities. *Exceptionality* 5(3), 131-161.

This study examined whether 30 elementary school students with learning disabilities can benefit from a computer-assisted instructional tutorial program to learn math word problem solving. **CAI, LD, PS, Lrng (EL)**

Siegler, Robert S. (1995). How Does Change Occur: A Microgenetic Study of Number Conservation. *Cognitive Psychology* 28(3), 225-273.

Microgenetic methods can illuminate the path, rate, breadth, variability, and sources of change. The present study illustrates the types of information the method can yield in the context of number conservation with 5-year-olds. **Lrng, NSns, PS, Tchg (EC)**

Silver, Edward A.; And Others. (1995, January). Generating Multiple Solutions for a Problem: A Comparison of the Responses of U.S. and Japanese Students. *Educational Studies in Mathematics* 28(1), 35-54.

U.S. (n=150) and Japanese (n=200) fourth graders generated multiple solutions with explanations for a simple mathematical task. Results discuss gender differences, strategy frequencies, and use of formal language. **CC, Gend, PS, Lang (EL)**

Simon, Martin A. (1995, March). Reconstructing Mathematics Pedagogy From a Constructivist Perspective. *Journal for Research in Mathematics Education* 26(2), 114-145.

An overview of the constructivist perspective and theory development upon which a constructivist teaching experiment with 20 prospective elementary teachers was based. Derives a theoretical framework for math pedagogy and curriculum.

Lrng, Prsv, Tchg, Curr (EL & TE)

Simon, Martin A. (1995, March). Elaborating Models of Mathematics Teaching: A Response to Steffe and D'Ambrosio. *Journal for Research in Mathematics Education* 26(2), 160-162.

Discusses constructivist teaching, students' prior knowledge, teachers' construction of models of students' mathematics, and the need to make the role of the mathematics teacher problematic. **Knw, Lrng, Tchg, Tchr (K-12)**

Skaalvik, Einar M.; Rankin, Richard J. (1995, Spring). A Test of the Internal/External Frame of Reference Model at Different Levels of Math and Verbal Self-Perception. *American Educational Research Journal* 32(1), 161-184.

Predictive relations are examined between math and verbal achievement and several different measures of motivation with (n=348) sixth grade and (n=325) ninth grade Norwegian students. **Ach, Aff, Ethn, Lang (SE)**

Smith, John P. (1995). Competent Reasoning with Rational Numbers. *Cognition and Instruction* 13(1), 3-50.

This study analyzes K-12 students' reasoning with fractions. Students often used invented strategies which produced fast and reliable solutions with a minimum of computation effort to complete tasks assessing order and equivalence. **Eqv, Frac, Lrng (K-12)**

Solar, Claudie. (1995, April). An Inclusion Pedagogy in Mathematics Education. *Educational Studies in Mathematics* 28(3), 311-333.

Discusses characteristics in feminist pedagogy literature and situates them with respect to four dialectical aspects which are combined with non-discriminatory classroom practices to develop a frame of reference for inclusive pedagogy. **Gend, Revw, Tchg, Curr, Ethn (K-12)**

Sophian, Catherine. (1995). Representation and Reasoning in Early Numerical Development: Counting, Conservation, and Comparisons between Sets. *Child Development* 66(2), 559-577.

The study examined the developmental relation between counting and number conservation in the 3-6-year-old age range. Results indicated extended developments in children's counting and their conservation reasoning. **Lrng, NSns, Eqv (EC)**

Sophian, Catherine; Harley, Heidi; Martin, Constance S.M. (1995). Relational and Representational Aspects of Early Number Development. *Cognition and Instruction* 13(2), 253-268.

Two experiments examine the role of representations of numerosity in children's reasoning about relations between two quantities. Three- and 4-year-olds were able to use both number matches and correspondence relations. **Eqv, NSns, Rep, Lrng (EC)**

Sophian, Catherine; Vong, Keang I. (1995). The Parts and Wholes of Arithmetic Story Problems: Developing Knowledge in the Preschool Years. *Cognition and Instruction* 13(3), 469-477.

A study comparing 4- and 5-year-old children's arithmetic (initial-unknown and final-unknown) problem solving provided evidence for the early development of knowledge about part-whole relations. **A/S, PS (EC)**

Sophian, Catherine; Wood, Amy M.; Vong, Keang I. (1995). Making Numbers Count: The Early Development of Numerical Inferences. *Developmental Psychology* 31(2), 263-273.

Two experiments examined preschool children's ability to draw inferences about numerosity from correspondences between sets. Children were able to make numerical inferences as early as 3 years of age. **Eqv, NSns, PS (EC)**

Steffe, Leslie P.; D'Ambrosio, Beatriz S. (1995, March). Toward a Working Model of Constructivist Teaching: A Reaction to Simon. *Journal for Research in Mathematics Education* 26(2), 146-159.

Discusses constructivist teaching, students' mathematical knowledge, activating prior knowledge, hypothetical learning trajectory, and reflection in teaching mathematics, all in reaction to Simon's model of constructivist pedagogy. **Knw, Lrng, Tchg (K-12)**

Steinback, Myriam; Gwizdala, Joyce. (1995, January). Gender Differences in Mathematics Attitudes of Secondary Students. *School Science and Mathematics* 95(1), 36-41.

Student attitudes towards mathematics were investigated before (n=353 females) and after (n=697 males and females) two single-sex, college preparatory, parochial high schools merged. **Att, Gend, Blf, Tchr (HS)**

Swetz, Frank. (1995, July). To Know and To Teach: Mathematical Pedagogy From a Historical Context. *Educational Studies in Mathematics* 29(1), 73-88.

Investigated historical works for pedagogical techniques. Use of instructional discourse, logical sequencing of mathematical problems and exercises, and employment of visual aids. **Tchg, TKnw, Oral, PS (K-12)**

Swinson, Kevan V. (1995, October). An Investigation of the Methods Used by Australian Mathematics Teachers to Keep Abreast with Current Curriculum Developments. *Mathematics Education Research Journal* 7(2), 148-159.

A survey of 439 teachers in 73 high schools to determine how they become conversant with current math curriculum development efforts suggests that Australian math teachers infrequently undertake professional development activities. **Curr, Isrv, Ethn, Tchr (HS & TE)**

Taole, James K.; And Others. (1995, April). Gender Interaction in Mathematics Classrooms: Reflection and Transformations. *Educational Studies in Mathematics* 28(3), 263-274.

Reports studies done in (n=100) junior high schools in Botswana. Initial studies were more quantitative in nature, dealt with questioning as part of classroom interaction, and revealed gender-related issues. **Ethn, Gend, Oral, Rsch, Tchg (SE)**

Taplin, Margaret. (1995, Winter). An Exploration of Persevering Students' Management of Problem Solving Strategies. *Focus on Learning Problems in Mathematics* 17(1), 49-63.

Interviewers asked (n=10) 6th and (n=10) 10th graders to solve non-routine number problems. Task analysis of perseverers found that students who were ultimately successful were more inclined to be flexible in their strategies. **Att, Lrnr, PS, Arth (SE)**

Tartre, Lindsay Anne; Fennema, Elizabeth. (1995, April). Mathematics Achievement and Gender: A Longitudinal Study of Selected Cognitive and Affective Variables [Grades 6-12]. *Educational Studies in Mathematics* 28(3), 199-217.

Longitudinal study of math achievement and gender of (n=60) students progressing from 6th to 12th grade. Includes: gender differences in stereotyping math as a male domain and correlation between achievement and confidence. **Ach, Aff, Gend, Blf (SE)**

Terwilliger, James S.; Titus, Janet C. (1995, Winter). Gender Differences in Attitudes and Attitude Changes Among Mathematically Talented Youth. *Gifted Child Quarterly* 39(1), 29-35.

Repeated measures (4 times) over two consecutive years of seven self-reported attitude scales were completed by 645 male and 522 female applicants; first as seventh and eighth graders. Attitudes of all declined; females more sharply. **Att, Gend, Gift (MS)**

Thomas, Noel; Mulligan, Joanne. (1995, April). Dynamic Imagery in Children's Representations of Number. *Mathematics Education Research Journal* 7(1), 5-25.

Links between understanding of the numeration system and representations of the counting sequence 1-100 of (n=77) high ability grade 5 and 6 children reveal three types of representation: pictorial, iconic, or notational characteristics. **PlcV, Rep, Vis (MS)**

Triadafillidis, T. A. (1995, October). Circumventing Visual Limitations in Teaching the Geometry of Shapes. *Educational Studies in Mathematics* 29(3), 225-35.

Results of a study in Greece, Scotland, and the U.S. using haptic exploration, the intentional movements of one's hands about an object, as an alternative approach for teaching the geometry of two- and three-dimensional shapes. **CC, Geom, Vis, Manp (SE)**

Van Den Heuvel-Panhuizen, Marja, And Others. (1995, November). Student-generated Problems: Easy and Difficult Problems on Percentage. *For the Learning of Mathematics* 15(3), 21-27.

Reports on the knowledge of fifth-grade students about what they are learning about percentage. Reveals the range of comfort students had in the instructional sequence and provides suggestions for developing assessment tasks. **Assm, RaPc, Knw, PS (MS)**

Vithal, Renuka, And Others. (1995, September). Project Work in University Mathematics Education: A Danish Experience. Aalborg University. *Educational Studies in Mathematics* 29(2) 199-223.

Perspectives from students and teachers about project work in mathematics. Presents a theoretical framework consisting of problem-centered studies, interdisciplinarity, participant-directed studies, and the exemplarity principle. **Blf, Ethn, Lrng, PS (PS)**

Vitulli, William F.; Henderson, Mary E. (1995). Mental Arithmetic as a Function of Computerized Digit Rates, Gender, and Size of Audience. *Psychological Reports* 76(1), 275-283.

Mental-arithmetic tests were given to (n=40 men and n=77 women) volunteers using three rates of digit presentation. Results found a significant main effect for rate of presentation and two-way interaction between gender and size of audience. **Arth, Gend, Lrng (PS)**

Warren, Elizabeth; English, Lyn. (1995, June). Facility with Plane Shapes: A Multifaceted Skill. *Educational Studies in Mathematics* 28(4), 365-383.

A series of spatial tasks administered to (n=20) children aged 4 to 12 revealed that both initial perception of a shape and its manipulation strongly influenced children's success at shape recognition. **Geom, Manp, Vis, Lrng (EL)**

Watanabe, Tad. (1995, October). Coordination of Units and Understanding of Simple Fractions: Case Studies. *Mathematics Education Research Journal* 7(2), 160-175.

Four second graders were interviewed to study relationships between fraction concepts and whole number concepts. Findings suggest that the schemes to coordinate units were closely related to how the children understood fractions. **Frac, Lrng, Whol (EC)**

Watson, Anne. (1995, February). Evidence for Pupils' Mathematical Achievements. *For the Learning of Mathematics* 15(1), 16-20.

Anecdotal data from discussions with 12 secondary teachers about types of evidence of students' math achievements the teachers use. Includes: voluntary use of math, knowledge of the child, teachers' views of math, and body language. **Ach, Assm, Lrnr, TBlf, TKnw (SE)**

Watson, Jane M.; And Others. (1995, Winter). Developmental Structure in the Understanding of Common and Decimal Fractions. *Focus on Learning Problems in Mathematics* 17(1), 1-24.

Interview and questionnaire responses of K-10 students completing common and decimal fraction tasks suggested the existence of two sequential unistructural-multistructural-relational learning cycles within the concrete symbolic mode.

Decm, Frac (K-12)

Watters, James J.; English, Lyn D. (1995, September). Children's Application of Simultaneous and Successive Processing in Inductive and Deductive Reasoning Problems: Impklications for Developing Scientific Reasoning Skills. *Journal of Research in Science Teaching* 32(7), 699-714.

This research studies problem solving and scientific reasoning in 10-year-old children. Results indicated that syllogistic reasoning and inductive reasoning were significantly correlated with both simultaneous and successive synthesis. **PS, Ethn (EL)**

Webb, Noreen M.; Troper, Jonathan D.; Fall, Randy. (1995). Constructive Activity and Learning in Collaborative Small Groups. *Journal of Educational Psychology* 87(3), 406-423.

This study identified student behaviors that best predicted math learning in peer-directed small groups among seventh graders who needed help. Level of constructive activity was the strongest predictor of achievement. **Ach, Grpg, Lrng, Oral (MS)**

Wilensky, Uri. (1995, June). Paradox, Programming, and Learning Probability: A Case Study in a Connected Mathematics Framework. *The Journal of Mathematical Behavior* 14(2), 253-380.

A case study of a learner engaged with a probability paradox. The case illustrates that primary obstacles to learning probability are conceptual and epistemological and that engagement with paradox can be a powerful means of motivation. **Lrng, Prob, Tech, Aff (PS)**

Wolf, Yuval. (1995). Estimation of Euclidian Quantity by 5- and 6-Year-Old Children: Facilitating a Multiplication Rule. *Journal of Experimental Child Psychology* 59, 49-75.

An attempt was made to test whether intensive handling of Euclidean objects by 5- and 6-year-olds would facilitate a shift from the use of addition to multiplication to determine size (area). **Geom, Manp, Meas (EC)**

Woodward, John. (1995, Spring). Technology-Based Research in Mathematics for Special Education. *Focus on Learning Problems in Mathematics* 17(2), 3-23.

Presents an historical review of technology-based computer program development and research in math for special education. Discusses: consistent focus on mastering computational algorithms and the use of technology. **Comp, LD, Revw**, Arth, Cals, CAI **(K-12)**

Wynn, Karen. (1995). Origins of Numerical Knowledge. *Mathematical Cognition* 1(1), 35-60.

Evidence that human infants possess a mechanism for determining and representing small numbers of entities and procedures for operating on these representations to extract numerical relationships between them. Model included. **Lrng, NSns**, Manp, Rep **(EC)**

Yang, Ma Tzu-Lin; Cobb, Paul. (1995, January). A Cross-Cultural Investigation into the Development of Place-Value Concepts of Children in Taiwan and the United States. *Educational Studies in Mathematics* 28(1), 1-33.

Compares math achievement of children in Taiwan and the United States by analyzing the arithmetical learning contexts. Interviews with parents and teachers identify cultural beliefs; interviews with students identify level of sophistication.

Ach, CC, PlcV, Arth, Blf, Soc **(EC)**

Yusuf, Mian M. (1995). The Effects of Logo-Based Instruction. *Journal of Educational Computing Research* 12(4), 335-362.

Logo-Based Instruction was applied for teaching basic geometric concepts: points, rays, lines, segments and developing class activities and tutorial programs. The seventh and eighth graders (N=67) included gender and racial diversity. **Comp, Geom, Tchg**, Lrng, PS **(MS)**

Journals Searched

Alberta Journal of Educational Research (0)
AMATYC Review (0)
American Educational Research Journal (4)
American Journal of Education (1)
Child Development (3)
Cognition and Instruction (7)
Cognitive Psychology (1)
College Mathematics Journal (1)
Community College Journal of Research and Practice (1)
Computers in Human Behavior (0)
Developmental Psychology (2)
Educational and Psychological Measurement (3)
Educational Research (1)
Educational Review (1)
Educational Studies in Mathematics (29)
Educational Technology (1)
Elementary School Journal (3)
Exceptional Children (0)
Exceptionality (1)
Focus on Learning Problems in Mathematics (14)
For the Learning of Mathematics (5)
Gifted Child Quarterly (2)
Hiroshima Journal of Mathematics Education (5)
Instructional Science (1)
Japanese Journal of Educational Psychology (1)
Journal for Research in Mathematics Education (20)
Journal for the Education of the Gifted (1)
Journal of Applied Behavior Analysis (1)
Journal of College Science Teaching (0)
Journal of College Student Development (1)
Journal of Computers in Mathematics and Science Teaching (4)
Journal of Counselling Psychology (1)
Journal of Early Adolescence (1)
Journal of Educational and Psychological Consultation (1)
Journal of Educational Computing Research (2)
Journal of Educational Measurement (1)
Journal of Educational Psychology (7)
Journal of Educational Research (2)
Journal of Elementary Science Education (1)
Journal of Experimental Child Psychology (4)
Journal of Experimental Education (3)
Journal of Experimental Psychology: General (4)
Journal of Learning Disabilities (1)
Journal of Mathematical Behavior (The) (6)
Journal of Negro Education (1)
Journal of Research in Science Teaching (2)
Journal of Research on Computing in Education (0)
Journal of School Psychology (0)
Journal of Science Education and Technology (0)
Journal of Social Psychology (1)
Learning Disabilities Research and Practice (1)
L'Insegnamento della Matematic e delle Scienze Integrate (3)
Mathematical Cognition (2)
Mathematics and Computer Education (0)
Mathematics Education Research Journal (9)
Mathematics in School (0)
Mathematics Teacher (6)
Mathematics Teaching in the Middle School (1)
Ohio Journal of School Mathematics (0)
Perceptual and Motor Skills (0)
Physics Teacher (The) (1)
PRIMUS (4)
Psychological Reports (5)
Psychological Science (1)
Remedial and Special Education (1)
Review of Educational Research (3)
Research in Science Education (1)
Scandinavian Journal of Educational Research (1)
School Science and Mathematics (6)
Science Education (1)
Science (0)
Teaching and Teacher Education (2)
Teaching Children Mathematics (5)
Teaching Mathematics and Its Applications (1)
Teaching Statistics (2)

Research Papers and Monographs Produced in 1995

Michelle K. Reed, *The Ohio State University*

Gale A. Watson, *West Liberty State College*

This section lists 81 papers and monographs in mathematics education research dated 1995 and abstracted for the ERIC database by the end of March 1996. Each entry is coded (see Key to Codes) with 1-3 ***Major*** and any number of *Minor* topic codes, as well as the grade ***LEVEL*** (in parentheses). Studies related to preservice or inservice teacher education are indicated by the appropriate topic codes (*Prsv, Isrv*). The ***LEVEL*** designated for teacher education or teacher studies first indicates the grade level(s) at which the intern or teacher participants teach, followed by the level "TE" for "teacher education" or "teacher." All entries are indexed by ***Major*** codes at the end of this volume.

Allen, Bradford D. (1994, April). *Model of Frustration During Problem Solving*. Paper presented at the New England Educational Research Organization, Rockport, ME, April 20-22, 1994. [SE 057 706]

Mandler's linking of emotion to perception makes emotion during problem solving an excellent candidate to be modeled with catastrophe theory. This was tested using data (n=14) students in a graduate problem-solving class. 46 references. **Aff, PS (PS)**

Anderman, Eric; and others. (1995, March). *Learning to Value Mathematics: Individual Differences and Classroom Effects*. Paper presented at the Annual Meeting of the Society for Research in Child Development, Indianapolis, IN, March 1995. [SE 056 129]

Effects of individual and classroom level factors on reported value of math for students (n=577) in grades 3, 4, and 6. Positive relationships with use of computers and computer efficacy suggest that teachers do make a difference. **Blf, Tech, Aff (EL)**

Are Our High School Graduates Prepared in Mathematics and Science? (1994, September). Iowa City, IA: American College Testing. [SE 056 241]

This document contains a condensed summary of results for the nation's ACT-tested public school graduating class of 1994. Findings report information about high school coursework and comparisons by ethnicity/race and gender. **Assm, Ethn, Gend, CC (HS & PS)**

Atweh, Bill; and others. (1995, April). *Social Context in Mathematics Classrooms: Social Critical and Sociolinguistic Perspectives*. Paper presented at the Annual Meeting of the American Educational Research Association, San Francisco, CA, April, 1995. [SE 056 580]

A study of gender and socioeconomic background on the students' classroom communication and hidden curriculum among ninth-graders in two single-sex private schools revealed that boys stressed structure and concepts whereas girls stressed skills or rules.
Soc, Oral, Gend, Lrng, Curr, Lang **(HS)**

Beaman, Carol J. (1994, April). *Solving the Homework Problem in Algebra Through the Use of Grade Control Charting*. Chicago, IL: Saint Xavier University. [SE 054 696]

The report describes a program to improve homework on-time completion using a Grade Control Chart as a visual reminder of the value of timely completion of homework. No practical significance to the intervention. **Tchg, Assm, Alg, Gift (SE)**

Bell, Garry (Ed.); and others. (1994, July). *MERGA 17: Book of the Proceedings of the 17th Annual Conference of the Mathematics Education Research Group of Australasia: Challenges in Mathematics Education: Constraints on Construction. Volume 1.* Australia; North Ryde, New South Wales: Mathematics Education Research Group of Autralasia. [SE 055 683]

Contains 4 keynote speeches and 36 refereed papers presented at the Seventeenth Conference of the Mathematics Education Research Group of Australasia held in Lismore, Australia, July 1994. **Rsch, Lrng, CC, Curr (ALL)**

Bell, Garry (Ed.); and others. (1994, July). *MERGA 17: Book of the Proceedings of the 17th Annual Conference of the Mathematics Education Research Group of Australasia: Challenges in Mathematics Education: Constraints on Construction. Volume 2.* Australia; North Ryde, New South Wales: Mathematics Education Research Group of Autralasia. [SE 055 684]

Contains 42 refereed papers presented at the Seventeenth Conference of the Mathematics Education Research Group of Australasia held in Lismore, July 1994.
Rsch, Lrng, CC (ALL)

Blank, Rolf K.; Pechman, Ellen M. (1995, May). *State Curriculum Frameworks in Mathematics and Science: How are They Changing Across the States?* Washington, DC: Council of Chief State School Officers. [SE 056 837]

The purposes of this one-year study were to define and describe (n=60) state mathematics and science curriculum frameworks, evaluate the role of frameworks in systemic reform, and assist states with development of new frameworks. **Curr, Assm, Impl (ALL)**

Brazziel, William F.; Brazziel, Marian E. (1995). *Distinctives of High Producers of Minority Science and Engineering Doctoral Starts.* Storrs, CT: University of Connecticut. [SE 056 901]

This study examined the characteristics of colleges and universities shown to be exceptionally successful in sending underrepresented minorities (Indian, Hispanic, and Black Americans) on to doctoral study in science and engineering. **Ethn (PS)**

Butkowski, Jean; and others. (1994, April). *Improving Student Higher-Order Thinking Skills in Mathematics.* Chicago: Saint Xavier University. [SE 054 687]

Three interventions, cooperative learning, problem solving strategies instruction, and a problem solving supplement, were used with 38 third, 27 fifth, and 27 sixth graders. Confidence and problem solving involving higher order thinking improved.
PS, Ach, Aff, Blf, Grpg, Tchg (EL)

Civil, Marta. (1995, April). *Bringing the Mathematics to the Foreground.* Paper presented as part of a symposium entitled Contextualizing Mathematics and Bridging Cultures: Supporting Reform Mathematics Classrooms for Latino Students at the Annual Meeting of the American Educational Research Association, San Francisco, CA, April 1995. [SE 057 700]

This paper explores possible explanations for why mathematics seems to remain in the background for many minority students. Building on students' backgrounds and experiences, theoretical framework, and 4 learning modules are discussed. **Ethn, Curr, Lrng (K-12)**

da Ponte, Joao Pedro & Matos, Joao Filipe (Eds.). (1994, July). *Proceedings of the Eighteenth International Conference for the Psychology of Mathematics Education: Volume 1*. Portugal: University of Lisbon. [SE 055 807]

Plenary papers, short oral communications, posters, and descriptions of the working and discussion groups at the Eighteenth Conference of the International Group for the Psychology of Math Education held in Lisbon, July/August 1994. **Rsch, Lrng, Phil**, CC, Alg **(ALL)**

da Ponte, Joao Pedro & Matos, Joao Filipe (Eds.). (1994, July). *Proceedings of the Eighteenth International Conference for the Psychology of Mathematics Education: Volume 2*. Portugal: University of Lisbon. [SE 055 808]

Contains 50 papers presented at the Eighteenth Conference of the International Group for the Psychology of Mathematics Education held in Lisbon, July/August 1994.
Rsch, Lrng, CC **(ALL)**

da Ponte, Joao Pedro & Matos, Joao Filipe (Eds.). (1994, July). *Proceedings of the Eighteenth International Conference for the Psychology of Mathematics Education: Volume 3*. Portugal: University of Lisbon. [SE 055 809]

Contains 52 papers presented at the Eighteenth Conference of the International Group for the Psychology of Mathematics Education held in Lisbon, July/August 1994.
Rsch, Lrng, CC **(ALL)**

da Ponte, Joao Pedro & Matos, Joao Filipe (Eds.). (1994, July). *Proceedings of the Eighteenth International Conference for the Psychology of Mathematics Education: Volume 4*. Portugal: University of Lisbon. [SE 055 810]

Contains 54 papers presented at the Eighteenth Conference of the International Group for the Psychology of Mathematics Education held in Lisbon, July/August 1994.
Rsch, Lrng, CC **(ALL)**

Daly, Brian E. (1994, November). *School Quality Planning and Evaluation Tool: Science, Mathematics, and Related Technologies Quality Measurement (SMARTQM)*. Paper presented at the Mid-South Education Research Association Annual Meeting, Nashville, TN, November 9-11, 1994. [SE 057 624]

The purpose of this study was to evaluate the Science, Mathematics, and Related Technologies Quality Measurement (SMARTQM) as a measure of total school quality and to determine the usefulness of this instrument in predicting school performance through self-reported student achievement. **Assm, Rsch, Ach (K-12)**

DeCorte, Erik, and others. (1995, April). *Word Problems: Game or Reality? Studies of Children's Beliefs About the Role of Real-World Knowledge in Mathematical Modeling*. Paper presented at the Annual Meeting of the American Educational Research Association, San Francisco, CA, April 18-22, 1995. [SE 056 792]

Two related studies (75 and 30 fifth graders, respectively) report that students tend to exclude common-sense knowledge and realistic considerations during the solution of arithmetic word problems. **PS, Blf, Rep**, Arth, Ethn **(EL)**

Doerr, Helen M. (1995, April). *An Integrated Approach to Mathematical Modeling: A Classroom Study*. Paper presented at the Annual Meeting of the American Educational Research Association, San Francisco, CA, April 18-22, 1995. [SE 056 798]

This study focused on how 17 students used computer models to construct their understanding of contextual problems in the content area of vectors and forces. It was conducted in an integrated algebra, trigonometry, and physics class. **IC, Rep, Comp**, Tech, Lrng **(HS)**

Edwards, Thomas G. (1994, November). *Reflective Cycle: The Evolution of a Model of Teacher Change*. Paper presented at the 1994 Annual Conference of the North American Chapter of the International Group for the Psychology of Mathematics Education, Baton Rouge, LA, November 6, 1994. [SE 055 949]

A model (based on constructivism) evolved during a two-year study as math teachers' implemented an innovative curriculum program. The model assists teacher educators in understanding the process of change in teaching practice. **Isrv, Tchr, Curr**, Styl **(ALL)**

Edwards, Thomas G. (1995, April). *The Use of an Innovative Curriculum: Enabling and Inhibiting Change in Practice*. Paper presented at the Annual Meeting of the National Council of Teachers of Mathematics, 73rd, Boston, Massachusetts, April 1995. [SE 055 993]

Case studies of three secondary teachers implementing UCSMP for the first time. The 2-year research examined whether curriculum materials play a role in the process of change in instructional practice. Materials facilitated some changes.

Curr, Tchr, Lrng, Matl, Grpg **(SE & TE)**

English, Lyn D. (1995, April). *Children's Problem Posing in Computational Contexts*. Paper presented at the Annual Meeting of the American Educational Research Association, San Francisco, CA, April 18-22, 1995. [SE 056 579]

Problem-posing abilities of (n=54) third graders who displayed different patterns of achievement in number concepts and novel problem solving were investigated in this paper.

PS, Arth, NSns, A/S **(EC)**

Ernest, Patricia S. (1994, November). *Evaluation of the Effectiveness and Implementation of a Math Manipulatives Project*. Paper presented at the Annual Meeting of the Mid-South Educational Research Association, Nashville, TN, November 9-11, 1994. [SE 057 682]

This paper reports on a project to enrich high school algebra and geometry programs through the use of manipulatives with (n=40) high school teachers.

Manp, Alg, Geom, Att, Isrv **(HS & TE)**

Ernest, Paul (Ed.). (1994). *Mathematics, Education, and Philosophy: An International Perspective*. Bristol, PA: Taylor & Francis Press. [SE 055 587]

Parts are (1) Reconceptualizing the Philosophy of Mathematics; (2) Post-modernist and Post-structuralist Approaches; (3) The Human Face of Mathematics; and (4) The Social Context of Mathematics and Education. Chapter references and a subject index are included.

Phil, Soc, Lrng, Gend, Styl **(ALL)**

Ernest, Paul (Ed.). (1994). *Constructing Mathematical Knowledge: Epistemology and Mathematical Education*. Bristol, PA: Taylor & Francis Press. [SE 055 588]

Parts are (1) Constructivism and the Learning of Mathematics; (2) Psychology, Epistemology and Hermeneutics; (3) Enquiry in Mathematics Education; (4) History, Mathematics and Education. Chapter references & subject index are included.

Lrng, Styl, Rsch, Soc, Tchg, Phil **(ALL)**

Fan, Xitao. (1995, April). *Change in Mathematics Proficiency for Male and Female Students from 8th to 12th Grade: A Study Based on a National Longitudinal Sample*. Paper presented at the Annual Meeting of the American Educational Research Association, San Francisco, CA, April 18-22, 1995. [SE 056 796]

This study explored potential gender differences in math achievement using data from the 1988 National Education Longitudinal Study. Gender differences became more prominent as more extreme score ranges were examined. **Gend, Ach, Assm (SE)**

Fasko, Sharla Nichols. (1994, August). *The Effects of a Peer Tutoring Program on Math Fact Recall and Generalization*. Paper presented at the Annual Meeting of the American Psychological Association, Los Angeles, CA, August 1994. [SE 056 130]

The study assessed the effectiveness of a peer tutoring intervention for fluency in basic math facts. Eight fourth and fifth graders were selected from a combined classroom in Appalachia. Some students in the classroom had mild disabilities.

Arth, D/R, Grpg, M/D, Ach, LD **(EL)**

Frid, Sandra; White, Loren. (1995, April) *Secondary School Mathematics in Perspective: Conceptions of its Nature and Relevance*. Paper presented at the Annual Meeting of the American Educational Research Association, San Francisco, CA, April 18-22, 1995. [SE 056 788]

This study examined the nature of students' and teachers' conceptions of what mathematics is, the purposes and the outcomes of school mathematics. Forty students (grades 10-12) and 19 teachers in Australia were interviewed.

Blf, TBlf, Phil, Ethn, Att, TAtt, Soc **(HS & TE)**

Goh, Swee Chiew; Fraser, Barry J. (1995, April). *Learning Environment and Student Outcomes in Primary Mathematics Classrooms in Singapore*. Paper presented at the Annual Meeting of the American Educational Research Association, San Francisco, April, 1995. [SE 057 302]

This study examined the nature and impact of interpersonal teacher behavior and classroom climate on the affective and cognitive outcomes of 1512 students in Singapore. Included gender, achievement, attitudes, & classroom perceptions.

Ach, Aff, Tchr, Ethn, Gend, Lrng **(EC)**

Grandy, Jerilee. (1994, June). *GRE Research: Gender and Ethnic Differences among Science and Engineering Majors: Experiences, Achievements, and Expectations*. Princeton, NJ: Educational Testing Service. [SE 056 530]

The project surveyed a stratified sample of 1,651 college seniors who were majoring in natural sciences, mathematics, computer sciences, and engineering. This report focuses on the gender and ethnic differences. **Gend, Ethn,** Assm **(PS)**

Gutbezahl, Jennifer. (1995) *How Negative Expectancies and Attitudes Undermine Females' Math Confidence and Performance: A Review of the Literature*. Amherst, MA: Department of Psychology, University of Massachusetts. [SE 055 889]

Females' underperformance is discussed. A cycle of low expectancies and attitudes leads to low performance which leads to even lower expectancies perpetuating the cycle. 109 references. **Revw, Gend, Att,** Blf, Tchr, Anx **(ALL)**

Harding, R. Frederick; Fletcher, Richard K., Jr. (1994, November). *Effectiveness of Variations in Collaborative Cooperative Learning in RDS Mathematics Classes.* Paper presented at the Annual Meeting of the Tennessee Academy of Science [SE 055 888]

Semester studies of 98 remedial and 56 developmental students from math courses assigned to four groups: traditional cooperative learning (CL), ability aligned CL, alphabetical CL, and control. Greatest gains by traditional CL groups. **D/R, Alg, Grpg,** Tchg, Ach **(PS)**

Harel, Guershon & Confrey, Jere (Eds.). (1994, July). *Development of Multiplicative Reasoning in the Learning of Mathematics.* Albany, NY: SUNY Press. [SE 055 786]

A compilation of recent research on the development of multiplicative concepts. (1) Theoretical Approaches, (2) The Role of the Unit, (3) Ratio and Rate, (4) Multiplicative Worlds, (5) Intuitive Models. Includes author and subject indices. **M/D, RaPc, Lrng,** Frac, Eqv **(EL)**

Hauger, Garnet Smith. (1995, April). *Rate of Change Knowledge in High School and College Students.* Paper presented at the Annual Meeting of the American Educational Research Association, San Francisco, CA, April, 1995. [SE 057 683]

Three types of rate of change knowledge for functions are discussed: global, interval, and point-wise. Multiple representations are used to examine how 37 high school students describe strategies used and how they make connections.

Cals, Lrng, Knw, Rep **(HS & PS)**

Highlights of Research Activities in Mathematics Education. (1994). Reston, VA: National Council of Teachers of Mathematics. [SE 056 975]

Prepared annually by the Research Advisory Committee of NCTM, this contains: listings of funded projects, publications, conferences, organizations, and funding sources. It is used to advise the Board of Directors on research in math education. **Revw, Rsch (ALL)**

Hodes, Carol L. (1995) *Gender Representations in Mathematics Software.* State College, PA: Penn State University. [SE 055 874]

This study examined (n=12) mathematics computer programs (K-6) with attention to the symbolic representations and graphics used. Results showed female main characters in the software all represented traditional female roles. 17 references. **Gend, Tech,** Comp **(EL)**

Hoffer, Thomas B.; and others. (1995, August). *Social Background Differences in High School Mathematics and Science Coursetaking and Achievement.* Washington, DC: National Center for Educational Statistics. [SE 057 100]

This report examines the relationships between the numbers of high school math and science courses completed and achievement on standardized tests. Findings include comparisons of gender, race-ethnicity, and socioeconomic-status. **Gend, Ethn, Ach,** Soc, Assm **(HS)**

Huinker, DeAnn; and others. (1995, January). *Landscape of Mathematics and Science Education in Milwaukee.* Milwaukee, WI: Center for Mathematics and Science Education Research. [SE 055 777]

A study of K-12 math and science programs in (n=40) Milwaukee public schools. Students want practical experiences and less teacher & more student talk. Staff needs: are practical instructional methods, integrated curriculum, & use of technology.

Isrv, Tchg, Curr (K-12)

Ireland, Dennis V.; Malone, John A. (1995, April). *Developing Partnerships within a Socio-Cultural Classroom: Changing Student and Teacher Roles.* Paper presented at the Annual Meeting of the American Educational Research Association, San Francisco, CA, April 18-22, 1995. [SE 056 790]

Action research as 13-year-old students were engaged in a collaborative, peer interactive classroom environment. How this environment influenced, and was influenced by, the students' attitude toward mathematics was studied. **Att, Soc, Tchg,** Ethn, Isrv **(MS)**

Jaworski, Barbara. (1994). *Investigating Mathematics Teaching: A Constructivist Enquiry.* Bristol, PA: Falmer Press. [SE 056 047]

Mathematics, teaching, and learning and how they are affected by a constructivist philosophy. Examines the choice of an ethnographic approach to research, case studies of three teachers and theory development. Includes a Teaching Triad model and 221 references

Tchg, Lrng, Rsch (ALL)

Kieren, Thomas; and others. (1995, April). *Coemergence: Four Enactive Portraits of Mathematical Activity.* Edmonton, AB: University of Alberta. [SE 057 558]

This paper contains research of evidences and artifacts of two students engaging in sustained mathematical activity. These four portraits of cognition in action consider conversation, beliefs, reasoning, and changes in understanding. **Lrng, Blf, Oral,** PS **(PS)**

Kirshner, David (Ed.). (1994, November). *Proceedings of the 16th Annual Meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education. Volume 1.* Baton Rouge, LA: International Group for the Psychology of Mathematics Education. [SE 055 636]

Contains 2 plenary papers, 26 research papers, 7 oral reports, 17 posters, and descriptions of the discussion and focus groups at the 16th Annual Meeting of the PME-NA held in Baton Rouge, Louisiana, in November 1994. **Rsch, Lrng, Phil,** CC, Tech **(ALL)**

Kirshner, David (Ed.). (1994, November). *Proceedings of the 16th Annual Meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education. Volume 2.* Baton Rouge, LA: International Group for the Psychology of Mathematics Education. [SE 055 637]

Contains 41 research reports, 10 oral reports, and 13 posters presented at the 16th Annual Meeting of the PME-NA held in Baton Rouge, Louisiana, in November 1994.

Rsch, Lrng, Aff, CC, Soc, Tchr **(ALL)**

Kjos, Ruth; Long, Kathryn. (1994, May). *Improving Critical Thinking and Problem Solving in Fifth Grade Mathematics.* Chicago: Saint Xavier University. [SE 054 682]

Students lacked strategies for problem solving, confidence in ability, and were unable to communicate their thinking. Change in instruction improved attitudes and ability to write about thinking for 171 fifth graders in a multicultural setting.

PS, Writ, Att, Ethn, Manp, Lrng **(MS)**

Lindquist, Mary M.; and others. (1995) *Reaching Standards: A Progress Report on Mathematics.* Princeton, NJ: Educational Testing Service. [SE 056 856]

This report uses the results of NAEP to provide a progress report on moving student achievement toward the standards set by NCTM. **Ach, Assm, Impl,** Tech, Tchg, PS **(K-12)**

Linn, Marcia C.; Kessel, Cathy. (1995, May). *Participation in Mathematics Courses and Careers: Climate, Grades, and Entrance Examination Scores.* Paper presented at the Annual Meeting of the American Educational Research Association, San Francisco, CA, April 1995. [SE 056 518]

Synthesizes findings that over half of math majors switch to other fields. Grades are examined by gender and persisters vs. switchers. Low quality instruction and courses weeding out rather than encouraging students seem to be a consensus.

Revw, AdvM, Gend, Ach, Tchg, Aff **(PS)**

Martin, William O. (1995). *Lasting Effects of the Integrated Use of Graphing Technologies in Precalculus Mathematics.* Paper presented at the Joint Annual Meetings of the American Mathematical Society and Mathematical Advancement Association , Cincinnati, Ohio, January 1994. [SE 057 539]

This study examined ways in which 18 first-semester calculus students continued technology from a graphing-intensive college algebra course completed one or two semesters earlier. Most use was mainly routine rather than advanced. **GCal, Alg, PS,** Cals **(PS)**

Masingila, Joanna O. (1995, April). *Examining Students' Perceptions of Their Everyday Mathematics Practice.* Paper presented at the Annual Meeting of the American Educational Research Association, San Francisco, CA, April 18-22, 1995. [SE 056 794]

This study examined (n=20) middle school students' perceptions of how they use math outside the classroom to learn more about students' everyday math practice and to close the gap between doing mathematics in school and out of school. **Blf, Knw, Rep,** Curr **(MS)**

McGinn, Michelle K. (1995, April). *Teacher's Mathematics Inside and Outside Classrooms: A Case Study of Mathematical Activity Across Contexts.* Paper presented at the Annual Meeting of the American Educational Research Association, San Francisco, CA, April, 1995. [SE 056 583]

Ways in which an experienced second-grade teacher understood and used math inside and outside her classroom were explored. Connections between school and nonschool math, classroom methods, and uses of math were investigated.

TKnw, Tchg, Lrng, Soc **(EC & TE)**

Meador, Elizabeth. (1995). *Teacher-Made Reform: Influences Shaping Curriculum in a High School Mathematics Department.* Paper presented at the Annual Meeting of the American Educational Research Association, San Francisco, April 1995. [SE 057 308]

Ethnography of a math department's struggle with curriculum change. Four elements of math reform: focus on students' complex thinking, change in locus of classroom authority, change in student roles, and professional development. **Curr, Tchg, PS,** Lrng, Isrv, Impl **(HS)**

Meyinsse, Joseph A.; Tashakkori, Abbas. (1994, November). *Analysis of Eighth Graders' Performance on Standardized Mathematics Tests.* Paper presented at the Annual Meeting of the Midsouth Educational Research Association, Nashville, TN, November 5, 1994. [SE 057 307]

A study to examine if (n=9000) eighth graders' performance on standardized math tests could be predicted from several variables, includi: g: gender, attitudes toward math, race/ethnicity, time spent or help on homework, available remedial.

Soc, Ach, Ethn, Gend, Att, Assm **(MS)**

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Nesbit, Tom. (1995, April). *Teaching Mathematics to Adults.* Paper presented at the Annual Meeting of the American Educational Research Association, San Francisco, CA, April 1995. [SE 057 705]

This study explored the teaching processes in mathematics education for adults and how they are shaped by certain social and institutional forces. **Tchg, Att, Soc, Lrng (PS)**

Nichols, Joe D. (1995, April). *The Effects of Cooperative Learning on Student Achievement and Motivation in a High School Geometry Class.* Paper presented at the Annual Meeting of the American Educational Research Association, San Francisco, CA, April 18-22, 1995. [SE 056 781]

The effects of a form of cooperative group (Student Teams Achievement Divisions) vs. traditional instruction on motivation and achievement with (n=90) randomly assigned students in a high school geometry class were examined. **Grpg, Ach, Aff, Geom, Lrng (HS)**

Owens, Douglas T., and others. (1995, October). *Proceedings of the Seventeenth Annual Meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education (2 volumes).* Columbus, OH: ERIC Clearinghouse for Science, Mathematics, and Environmental Education. [SE 057 177]

Contains 3 plenary addresses, 4 reaction papers, 86 research reports, 38 oral reports, 46 posters, and 2 discussion groups presented at the 17th Annual Meeting of the PME-NA. Plenary authors: P. Cobb, S. Damarin, and J. Kaput. **Lrng, Rsch, Soc, Alg, Tech (ALL)**

Pajares, Frank; Kranzler, John. (1994, Fall-Winter). *Confidence and Competence in Mathematics: The Role of Self-Efficacy, Self-Concept, and General Mental Ability. Journal of the Florida Education Research Council. Research Bulletin, 26(1-2).* Sanibel, FL: Florida Educational Research Council. [SE 055 965]

High school students' (N=329) self-efficacy beliefs proved as predictive of their capability to solve mathematics problems as did their general mental ability. Gender and racial differences were also examined. 48 references **Blf, PS, Aff, Gend, Ethn (HS)**

Pajares, Frank; Kranzler, John. (1995, April). *Role of Self-efficacy and General Mental Ability in Mathematical Problem-Solving: A Path Analysis.* Paper presented at the Annual Meeting of the American Educational Research Association, San Francisco, CA, April 18-22, 1995. [SE 056 784]

Problem-solving performance(N=329) was studied. Interactions of ability, self-efficacy, performance, background, and anxiety are reported. Girls and boys did not differ in ability, self-efficacy, or performance, but girls reported higher anxiety.

Ach, Blf, Gend, Anx, Aff, PS (HS)

Pajares, Frank; Miller, M. David. (1994, Fall-Winter). *Mathematics Self-Efficacy and Mathematical Problem-Solving: Implications of Using Varying Forms of Assessment. Journal of the Florida Education Research Council. Research Bulletin, 26(1-2).* Sanibel, FL: Florida Educational Research Council. [SE 055 966]

The study examined how forms of assessment (multiple-choice vs. open-ended) influenced 327 middle school students' mathematics self-efficacy. No differences were found in self-efficacy as a function of the different assessment formats. **Assm, Blf, Ach, PS (MS)**

Peng, Samuel S.; and others. (1995, February). *Understanding Racial-Ethnic Differences in Secondary School Science and Mathematics Achievement.* Washington, DC: U.S. Department of Education. [SE 055 976]

Why are blacks, Hispanics, and American Indians underrepresented in science and math-related fields, and why do these students have lower achievement test scores in science and math than other students? (n=1988 eighth-graders) **Ethn, CC, Ach (SE)**

Phillips, Eileen; Crespo, Sandra. (1995, April). *Math Penpals! Developing Written Communication in Mathematics.* Paper presented at the Annual Meeting of the American Educational Research Association, San Francisco, CA, April, 1995. [SE 056 581]

Explores the usefulness of math penpal letters between (n=28) 4th-graders and (n=27) preservice teachers attending a mathematics education course as a means of increasing the quality of written communication in mathematics. **Writ, Lrng**, Prsv, Assm **(EL & TE)**

Raymond, Anne M. (1994, November). *Collaborative Action Research in Mathematics Education: A Tale of Two Teacher-Researchers.* Paper presented at the 16th Annual Meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education, Baton Rouge, LA, November 1994. [SE 057 507]

This paper describes the initial phases of a collaborative research project centered around the incorporation of problem solving into a middle school mathematics curriculum.
Curr, PS, Rsch, Isrv, Impl **(MS)**

Rhine, Steve. (1995, April). *Students' Language Proficiency Effects Upon Teachers' Assessment of Students' Mathematical Understanding.* Paper presented at the Annual Meeting of the American Educational Research Association, San Francisco, CA, April 1995. [SE 057 698]

This research examined teachers' assessment of students' mathematical understanding. Results indicate that teachers know less about LEP (limited English proficient) students' understanding than that of non-LEP students. **Lang, Assm, CC**, TBlf **(MS)**

Rieck, William A.; and others. (1995, February). *Investigation into the Effectiveness of an Integrated Mathematics Course for College Freshmen Compared to Traditional Algebra for College Students.* Lafayette, LA: University of Southwestern Louisiana. [SE 056 128]

Students in traditional algebra vs. a course which integrated math disciplines and used reform strategies (real-world problem solving and cooperative learning) (n=140). Results included a lower attrition rate and more positive attitudes in reform course.
Alg, Att, Curr, Grpg, PS, IC **(PS)**

Rillero, Peter; and others. (1995, October). *Write From the Start: Writing-to-Learn Science and Mathematics.* Paper presented at the National Association of Biology Teachers National Convention, Phoenix, AZ, October 28, 1995. [SE 057 572]

This paper reviews the advantages and theoretical basis of the writing-to-learn approaches, explains how the method is implemented, and presents evaluation data from an exploratory study with (n=353) eighth grade students and teachers. **Writ, Lrng**, Att, Impl **(MS)**

Rogan, John M. (1995) *The Use of the Internet by Math and Science Teachers: A Report on Five Rural Telecommunications Projects.* Paper presented at the Annual Meeting of the American Educational Research Association, 76th, San Francisco, CA, April 8-22, 1995. [SE 056 394]

This paper discusses five projects which use telecommunications and the Internet to foster the renewal of math and science education in rural schools. Includes detailed evaluation and/or description information for three of the projects. **Tech, Comp, Isrv**, Soc, TAtt **(ALL)**

Sawyer, Ann Elisabeth. (1995). *Developments in Elementary Mathematics Teaching*. Portsmouth, NH: Heinemann Press. [SE 056 194]

The rapid introduction of Britain's National Curriculum for Mathematics and its effects upon classroom practice is the main thrust of this book. Teaching, Learning, and Technology are all discussed. 70 references. **Curr, Tchg, Tech**, Ethn, Lrng **(EL)**

Schalago-Schirm, Cynthia. (1995, April). *Does the Computer-Assisted Remedial Mathematics Program at Kearny High School Lead to Improved Scores on the N.J. Early Warning Test?* Unpublished manuscript. [SE 056 132]

Ninth graders (N=73) scoring below a state level of competency in eighth grade took a remedial math course that included computer-assisted instruction. More than half need further remediation despite significant gains in the sample mean scores.

CAI, Ach, Assm, Tech **(SE)**

Schmidt, Mary Ellen. (1995, October). *Teaching and Learning: Calculators in 5th & 6th Grade*. Paper presented at the Midwest Educational Research Association , Chicago, IL, October 12, 1995. [SE 057 453]

This study was conducted to develop insights into how teachers (one fifth and one sixth grade) integrate calculators into their course of study of science and mathematics. Meetings for encouragement and resource materials were provided. **Calc, Tchg**, Grpg, Isrv, IC **(MS)**

Sharp, Laure; and others. (1995). *Short-term Impact Study of the National Science Foundation's Young Scholars Program*. Arlington, VA: National Science Foundation. [SE 056 172]

Summarizes an exploratory study of the short-term impact of NSF's Young Scholars Program. Findings suggest YSP contributes to experiences that encourage the pursuit of advanced degrees and challenging professional roles. **Assm, Ethn**, Gend **(SE & PS)**

Sierpinska, Anna. (1994). *Understanding in Mathematics*. Bristol, PA: Taylor & Francis. [SE 055 586]

Chapter titles are Understanding and Meaning, Components and Conditions of an Act of Understanding, Processes of Understanding, Good Understanding, and Developmental and Cultural Constraints of Understanding. Includes 227 references.

Soc, Lrng, Phil, Styl, Tchg **(ALL)**

Silver, Edward A.; Burkett, Mary Lee. (1994, May). *The Posing of Division Problems by Preservice Elementary School Teachers: Conceptual Knowledge and Contextual Connections*. Paper presented at the Annual Meeting of the American Educational Research Association, New Orleans, LA, April 1994. [SE 056 020]

Prospective elementary teachers' (N=24) understanding of division was explored by examining problems they posed. Situated in contexts, problems did not represent a solid connection between the math and the context. 14 references

Patt, TKnw, M/D, PS, Arth, Prsv **(EL & TE)**

Stanley, Julian C., and others. (1995, April). *Ipsative Evaluative Attitudes Versus Vocational Interests and Cognitive Abilities of Bright Male Versus Female Seventh-Graders.* Paper presented at the Annual Meeting of the American Educational Research Association, April 20, 1995. [SE 057 681]

This empirical study involves three types of "tests": values, interests, and cognitive abilities useful for learning science. It also involves three methods of test-battery construction or use.
Gend, Aff, Gift, Blf, Lrng, Assm **(MS)**

Vaden-Kiernan, Nancy; and others. (1994, October). *Short-Term Impact Study of the Presidential Awards for Excellence in Science and Mathematics Teaching.* Arlington, VA: National Science Foundation. [SE 056 280]

Informal conversations held with 115 of the 430 Presidential Awardees in Science & Mathematics Teaching on how receiving the award has affected their lives and careers indicates it is seen as an overwhelming success in terms of its impact. **Tchr, TAtt,** Isrv, Soc **(TE)**

Van Zoest, Laura R. (1995, April). *Focus of Preservice Secondary Mathematics Teachers' Observations of Classroom Mathematics Instruction.* Paper presented at the Annual Meeting of the American Educational Research Association, San Francisco, CA, April 1995. [SE 056 393]

The effects of early field experiences on (n=3) preservice teachers by examining the focus of their observations: In decreasing order, classroom management, instructional strategies, teaching style, student behaviors, and math content. **Prsv, Tchg (SE & TE)**

von Glaserfeld, Ernst. (1995). *Radical Constructivism: A Way of Knowing and Learning.* Bristol, PA: Falmer Press. [SE 056 049]

This book gives a definitive theoretical account of radical constructivism: Theory of knowing, construction of concepts, reflection and abstraction, language, meaning and communication. 218 references. **Lrng, Phil,** Lang **(ALL)**

Wagner, Sigrid (Ed.). (1995, July). *Journal for Research in Mathematics Education: Research on Mathematics Education Reported in 1994. July 1995 Supplement.* Columbus, OH: ERIC Clearinghouse for Science, Mathematics, and Environmental Education. [SE 056 686]

This supplement to the JRME contains the annual listing of research in math education for 1994. Includes coded annotations for 251 dissertations, 185 journal articles, 57 papers and monographs. Also includes a list of journals searched. **Rsch (ALL)**

Watson, Gale A. (1995, April). *Middle School Mathematics Teacher Change: Social Constructivism Climbs a Step.* Paper presented at the Annual Meeting of the National Council of Teachers of Mathematics, 73rd, Boston, Massachusetts, April 1995. [SE 056 238]

Five middle school math teachers were interviewed to study background, early influences on their practice, and changes in instruction. Findings suggest that professional development activities need to be aligned with constructivism.
TKnw, Isrv, Lrng, Tchg, TBlf **(MS & TE)**

Watterson, Tricia. (1994, October). *Going for a Lasting Inservice Effect.* Glasgow, Scotland: University of Strathclyde. [SE 055 115]

An inservice program involving problem solving and inquiry, in line with the new Scottish National Guidelines in mathematics, has a lasting effect on teachers if an interest network is set up and maintained both by themselves and by the tutor. **Tech, PS, Isrv**, Tchr **(EL)**

Weiss, Iris R. (1994). *Profile of Science and Mathematics Education in the United States: 1993*. Chapel Hill, NC: Horizon Research, Inc. [SE 056 144]

Survey of approximately 6,000 teachers (grades 1-12) designed to identify trends in the areas of teacher background and experience, curriculum and instruction, and the availability and use of instructional resources. **TKnw, Curr, Tchg**, Matl, Tchr **(ALL & TE)**

Weiss, Iris R. (1995, April). *Mathematics Teachers' Response to the Reform Agenda: Results of the 1993 National Survey of Science and Mathematics Education*. Paper presented at the Annual Meeting of the American Educational Research Association, San Francisco, CA, April 18-22, 1995. [SE 056 793]

Data from the 1993 National Survey of Science and Math Education, considers teacher preparation, pedagogical beliefs, perceptions of their preparation, and the school as a collegial work place envisioned by the NCTM Standards. **Prsv, TBlf, TKnw**, Tchg, TAtt **(ALL & TE)**

Westbury, Ian (Ed.); and others. (1994) *In Search of More Effective Mathematics Education: Examining Data from the IEA Second International Mathematics Study*. Norwood, NJ: Ablex Publishing. [SE 055 947]

Studies that explore (1) Teaching and Learning Mathematics In Classrooms, (2) School Structures, Social Structures, Gender and Mathematics Education, and (3) New Methodologies for Research in Mathematics Education. **Tchg, Gend, Soc**, CC, Curr, Rsch **(SE)**

White, Loren; Frid, Sandra. (1995, April). *Contextual Perspectives of School Mathematics: What Determines Mathematical Understanding?* Paper presented at the Annual Meeting of the American Educational Research Association, San Francisco, CA, April 18-22, 1995. [SE 056 789]

A study into secondary school students' and teachers' conceptions of what mathematics is and the purposes of school mathematics. The role of math in secondary education in relation to curriculum movements (Australia) is questioned .

Soc, TBlf, Blf, Att, TAtt, Curr **(SE & TE)**

Women and K-12 Science and Mathematics Education: Hearing Before the Subcommittee on Energy of the Committee on Science, Space, and Technology. (1994, June). Washington, DC: U.S. Government Printing Office. [SE 056 159]

Issues of gender bias in precollege science and math education. Hearings of adults on achievement, participation, and treatment of girls; strategies and programs to increase gender equity and exposure to females; and strategies to provide training. **Gend, Ach**, Soc, Isrv **(K-12)**

Index

Every dissertation, journal article, paper, and monograph listed in the preceding three sections is indexed by 1-3 ***Major*** and any number of *Minor* topic codes (see Key to Codes). The 72 topic codes have been clustered into 18 groups of related topics for the purposes of indexing. Only the ***Major*** codes are listed after each entry in the index.

Achievement (Ach)

Dissertations

Abrahamson Ach, LD, Lang
Alkhateeb Att, Ach, GCal
Allen Cals, Att, Ach
Austin Tech, Alg, Ach
Bailey Soc, Ach, Aff
Baker Att, Wrt, Ach
Benes-Lafferty Curr, Ach, Att
Bohn D/R, Ach, CAI
Brancov Grpg, Ethn, Ach
Brehmer-Evans Comp, Ach, IC
Cai CC, Ach, Assm
Chen Comp, PS, Ach
Chism Alg, Ach, Att
Connors Comp, Ach, Gend
Cousins Ethn, Soc, Ach
Crates IC, D/R, Ach
Donnelly D/R, Ach, CAI
Dyer Comp, Alg, Ach
Edwards Ach, Tchg, Assm
Fair Blf, Ach, Gend
Fasko Grpg, Ach, LD
Fox A/S, Ach, Lrng
Franklin Ethn, Ach, Curr
Garneau PS, Ach
Gibbons Curr, Ach, Att
Goff Grpg, Ach
Goins Soc, Ach, Att
Golden Ethn, Ach, D/R
Gonte Aff, Blf, Ach
Hamilton Ach, CAI
Herman CC, Ach, Rep
Horsey Ach, CIIn
Hughes Ach, Lrng, Tchg
Hunnicutt PS, Ach, Assm
Ibe Soc, Ach, Tchg
Jamison Ach, Assm, Cals
Jones Calc, Ach, LD
Kanai Alg, Manp, Ach
Kim Comp, Ach, Aff
Kimball Ach, Mteg
Kinel Grpg, Ach, Ethn
Kinsella Lrnr, Ach
Kneese Ach, Curr
Larson Tech, Ach, Blf
Laub Ach, Comp
Lockwood Ach, Alg, Geom
Mainville-Lanthier Ach, Comp, Assm
Mayers Ach, Alg, Curr
Mcgaughey Alg, Ach, TAtt
Mcshea Curr, Ach, Gend
Mohamad-Ali Ach, Att, Gend
Mokatrin Ethn, Ach, Soc
Muehlman Ach, M/D, Curr
Niederhauser Att, Comp, Ach
Norris GCal, Alg, Ach
Padgett Cals, Ach, Comp
Pajares Blf, PS, Ach
Pandiscio Geom, Ach, Vis
Pankow Alg, GCal, Ach
Parker RaPc, PS, Ach
Patterson Ach, Assm, D/R
Pennett Ach, LD, Comm
Pruett Gend, Soc, Ach
Rentschler Curr, Ach, Lrng
Rice Soc, Tchg, Ach
Rice Ach, Soc
Riordan Ach, Tchg
Roberson Gend, Ach, Ethn
Roberts Ethn, Ach
Rolfs Isrv, Ach, Grpg
Rupp Ach, LD
Sanchez Ach, Aff, Wrt
Schloemer Alg, Ach, CIIn
Schnaithman-Vincent Soc, Ach, Gend
Scott Alg, GCal, Ach
Segars Ach, Curr
Shelton Ach, Lrng, Alg
Stephens D/R, Ach
Sundberg Geom, Ach, Vis

Teague	Ethn, Gend, Ach
Telese	Soc, Assm, Ach
Tookey	Ach, PS, Lrng
Tumminello	Anx, Ach, Styl
Van Akkeren	PS, Ach, Lrng
Wade	PS, Curr, Ach
Walker	D/R, Ach, Assm
Walsh-Cavazos	Isrv, TAtt, Ach
Wilkins	Alg, GCal, Ach
Williams	Alg, Tchg, Ach
Wright	Att, Ach, Ethn
Zuskin	Ach, Frac, Aff

Articles

Anazonwu	Stat, Aff, Ach
Bauman	Assm, D/R, Ach
Beidleman	Cals, Writ, Ach
Bell	Alg, Ach, Curr
Casey	Vis, Gend, Ach
Chen	CC, Ach, Aff
Davies	Assm, Curr, Ach
Fantuzzo	Soc, Aff, Ach
Feldhusen	Ach, Gift,Assm
Fuligni	Grpg, Ach
Fuligni	CC, Ach, Soc
House	Cals, Att, Ach
House	Ach, Gend, Aff
Kupermintz	Rsch, Ach, Lrnr
Leder	Ach, Gift, Gend
Leeson	Gend, Ach
Lemaire	M/D, Ach
Ma	Ach, Att, Ethn
Manger	Ach, Gend
McNamara	M/D, Calc, Ach
Miller	Arth, Ach, A/S
Naglieri	Plan, LD, Ach
Newman	PS, Ach, Aff
Norwood	PS, Grpg, Ach
Oliver	Tchg, Curr, Ach
Onwuegbuzie	Stat, Anx, Ach
Satake	Ach, CC, Anx
Schiefele	Ach, Aff
Shaughnessy	Cals, Aff, Ach
Skaalvik	Aff, Ach
Tartre	Ach, Gend, Aff
Watson	Ach, Assm, Lrnr
Webb	Grpg, Lrng, Ach
Yang	CC, PleV, Ach

Papers

Butkowski	PS, Ach, Aff
Daly	Assm, Rsch, Ach
Fan	Gend, Ach, Assm
Goh	Ach, Aff, Tchr
Hoffer	Gend, Ethn, Ach
Lindquist	Ach, Assm, Impl
Meyinsse	Soc, Ach, Ethn
Nichols	Grpg, Ach, Aff
Pajares	Ach, Blf, Gend
Pajares	Assm, Blf, Ach
Peng	Ethn, CC, Ach
Schalago-Schirm	CAI, Ach, Assm
"Women and K-12..."	Gend, Ach

Affect (Aff);
Anxiety (student's) (Anx);
Attitudes (student's) (Att);
Beliefs (student's) (Blf)

Dissertations

Alkhateeb	Att, Ach, GCal
Allen	Cals, Att, Ach
Bailey	Soc, Ach, Aff
Baker	Att, Wrt, Ach
Beaton	Anx, Lrng, D/R
Benes-Lafferty	Curr, Ach, Att
Bisse	Anx, D/R
Brahier	Aff, Alg, Blf
Browning	Anx
Brownridge	Gend, Anx, Att
Cabral-Pini	Grpg, Ethn, Att
Chism	Alg, Ach, Att
Cordeau	Gend, Soc, Att
Fair	Blf, Ach, Gend
Geskus	Blf, Prsv
Gibbons	Curr, Ach, Att
Goins	Soc, Ach, Att
Gonte	Aff, Blf, Ach
Grapin	Tech, Att, Soc
Griffith	Lrng, Att, Aff
Gross	Att, Tchg, Ethn
Harper	Gend, Aff, Lrnr
Harper	TBlf, Anx, Prsv
Holley	Grpg, Aff, Tchg
Hong	Stat, Att
Hunt	Gift, Att, Grpg
Ivey	Blf, Soc, Clln

Jia	Styl, Comp, Att
Kelly	Att, Gend, Grpg
Kim	Comp, Ach, Aff
Larson	Tech, Ach, Blf
Maple	Gend, Soc, Att
Martin	Anx, Att, Blf
Mather	Blf, Ethn
May	Cals, Att, GCal
Mireles	Att, Lrng, IC
Mixon	Att, Curr
Mohamad-Ali	Ach, Att, Gend
Moore	Mtcg, Blf
Niederhauser	Att, Comp, Ach
O'brien	Grpg, Att, Alg
Pajares	Blf, PS, Ach
Perry	Ethn, Att, Anx
Sachs	Anx, Soc, Att
Saleh	Cals, Gend, Aff
Sanchez	Ach, Aff, Wrt
Selisky	Int, Att
Springer	Gend, Anx, Att
Stiles	GCal, Cals, Att
Stockton	Alg, Gend, Att
Tompkins	Att, Gend, Grpg
Tumminello	Anx, Ach, Styl
Ward	Comp, Assm, Att
Wright	Att, Ach, Ethn
Zuskin	Ach, Frac, Aff

Articles

Anazonwu	Stat, Aff, Ach
Bessant	Anx, Stat
Boekaerts	PS, Lrng, Aff
Burn	Att, TAtt
Chen	CC, Ach, Aff
Fantuzzo	Soc, Aff, Ach
Fischbein	NSns, Blf
Forgasz	Gend, Aff, Blf
Fujioka	Curr, Att, Knw
Gierl	Anx, Att
House	Cals, Att, Ach
House	Ach, Gend, Aff
Jones	Gend, Att, Soc
LeBlanc	Aff, Prsv, Manp
Ma	Ach, Att, Ethn
Macmillan	Att, Soc
Middleton	Aff, Blf
Newman	PS, Ach, Aff
Nolen	Aff, Stat, Gend
Onwuegbuzie	Stat, Anx, Ach
Pajares	Aff, Blf
Reys	Arth, Ethn, Att, Rep, PS
Ross	Grpg, Att
Ruthven	Calc, Att, Blf
Satake	Ach, CC, Anx
Schau	Stat, Aff
Schiefele	Ach, Aff
Shannon	Blf, Assm, Revw
Shashaani	Comp, Gend, Att
Shaughnessy	Cals, Aff, Ach
Skaalvik	Aff, Ach
Steinback	Gend, Att
Taplin	PS, Att, Lrnr
Tartre	Ach, Gend, Aff
Terwilliger	Att, Gift, Gend
Vithal	Ethn, Blf

Papers

Allen	Aff, PS
Anderman	Blf, Tech, Aff
Butkowski	PS, Ach, Aff
DeCorte	PS, Blf, Rep
Frid	Blf, TBlf, Phil
Goh	Ach, Aff, Tchr
Gutbezahl	Revw, Gend, Att
Ireland	Att, Soc, Tchg
Kieren	Lrng, Blf, Oral
Kirshner	Rsch, Lrng, Aff
Kjos	PS, Writ, Att
Masingila	Blf, Knw, Rep
Nesbit	Tchg, Att, Soc
Nichols	Grpg, Ach, Aff
Pajares	Blf, PS, Aff
Pajares	Ach, Blf, Gend
Pajares	Assm, Blf, Ach
Rieck	Alg, Att, Curr
Stanley	Gend, Aff, Gift
White	Soc, TBlf, Blf

Algebra, pre-algebra (Alg); Calculus, precalculus (Cals); Post Calculus (Advm)

Dissertations

Adams	Alg, GCal, Lrng
Allen	Cals, Att, Ach
Aspinwall	Cals, Lrng
Atkins	Cals, Curr, Assm
Austin	Tech, Alg, Ach

Bates Alg, D/R
Berger Alg, PS, Lrng
Brahier Aff, Alg, Blf
Caldwell GCal, Lrng, Alg
Chism Alg, Ach, Att
Cobb Curr, Alg, Soc
Cook Lrng, Alg
Coston GCal, Alg, Grpg
Dennis Geom, Cals, Alg
Deulofeu Alg, Lrng
Dyer Comp, Alg, Ach
Fine Alg, Assm
Fiske Cals, Tchg, Lrng
Fitzsimmons Grpg, Cals, Lrng
Fyfe PS, Comp, Alg
Galindo-Morales Cals, Styl, Vis
Goodson-Espy Alg, Arth, PS
Haguel Assm, Cals, Lrng
Hancock Alg, Assm, Curr
Hodgkins Lrng, Alg
Huntington LD, Alg, Rep
Jamison Ach, Assm, Cals
Kanai Alg, Manp, Ach
Krussel Lrng, Vis, AdvM
Lockwood Ach, Alg, Geom
Loggins Alg, Comp, Rep
May Cals, Att, GCal
Mayers Ach, Alg, Curr
Mcgaughey Alg, Ach, TAtt
Norris GCal, Alg, Ach
O'brien Grpg, Att, Alg
O'callaghan Comp, Alg, Curr
Olsen Alg, Comp
Oster GCal, Lrng, Cals
Padgett Cals, Ach, Comp
Pankow Alg, GCal, Ach
Paschal Tech, Alg, GCal
Porzio Comp, PS, Cals
Sadatmand Alg, PS, CAI
Saleh Cals, Gend, Aff
Sanders Alg, Lrng
Schloemer Alg, Ach, CIIn
Schneider Cals, Curr, Lang
Scott Alg, GCal, Ach
Shelton Ach, Lrng, Alg
Simonsen TBlf, Cals, CIIn
Slavit Alg, GCal, Lrng
Stiles GCal, Cals, Att
Stockton Alg, Gend, Att
Turegano Manp, Cals, Lrng
Vodounon Comp, Alg, Lrng
Wholeben AdvM, Lrng, Assm
Wilkins Alg, GCal, Ach
Williams Cals, Lrng, Curr
Williams Alg, Tchg, Ach

Articles

Anderson Alg, Rep
Beidleman Cals, Writ, Ach
Bell Alg, Ach, Curr
Confrey Tchg, Alg, Lrng
Dugdale Tech, Alg
English Alg, PS
Garet Tchg, Alg
Hirst Lrng, AdvM, Assm
House Cals, Att, Ach
Kitz Alg, Tech, LD
Lefton Cals, Tech, Assm
Leron AdvM, Ethn, Lrng
MacGregor Alg, Rep
Nguyen-Xuan Comp, Alg, PS
Odell Assm, Alg, D/R
Ravaglia Gift, Cals, Gend
Schwarz Rep, Cals, Comp
Shah Rep, Alg, Vis
Shaughnessy Cals, Aff, Ach

Papers

Beaman Tchg, Assm, Alg
Ernest Manp, Alg, Geom
Harding D/R, Alg, Grpg
Hauger Cals, Lrng, Knw
Linn Revw, AdvM, Gend
Martin GCal, Alg, PS
Rieck Alg, Att, Curr

Anxiety (teacher's) (TAnx);
Attitudes (teacher's) (TAtt);
Beliefs (teacher's) (TBlf);
Content knowledge (teacher's), pedagogical knowledge (TKnw);
Teachers (characteristics of) (Tchr)

Dissertations

Barnes Tech, TBlf
Davis Tchg, TBlf, Isrv
Duncan Tchg, Tchr
Ferrell Tchr, TBlf
Fogarty PS, Styl, Tchr

Frost	Isrv, TBlf, TKnw
Gadanidis	Prsv, Tchg, TBlf
Gattuso	TBlf, TAtt, Tchg
Grant	Curr, TAtt
Harper	TBlf, Anx, Prsv
Hartog	TBlf, Oral, CIln
Johnson	CIln, TBlf, GCal
Keen	TKnw, Lrng
Kiragu	Tchg, TBlf
Kistler	TKnw, Prsv
Klages	Comp, TAtt
Laberge	Prsv, Gend, TAtt
Lee	TKnw, Plan, Prsv
Liu	TKnw, Tchr
Long	Comp, TAtt
Mcgaughey	Alg, Ach, TAtt
Nicol	Tech, GCal, TBlf
Reinke	Geom, Lrng, TAtt
Shealy	Tchg, TBlf, Lrng
Simmt	GCal, TBlf, Tchg
Simonsen	TBlf, Cals, CIln
Walsh-Cavazos	Isrv, TAtt, Ach
Wilkerson	Tchg, TBlf

Articles

Anders	TKnw, Tchg, Isrv
Burn	Att, TAtt
Even	TKnw, Lrnr, Plan
Fleener	TBlf, Calc, Phil
Frid	Lrng, Soc, TAtt
Gregg	Tchr, TBlf
Jones	Prsv, TKnw, Lrng
Knapp	Tchg, TBlf, Isrv
McDevitt	Prsv, TKnw, TBlf
Moreira	TAtt, Comp
Mura	TBlf, Phil, Tchr
Swetz	TKnw, Tchg

Papers

Edwards	Isrv, Tchr, Curr
Edwards	Curr, Tchr, Lrng
Frid	Blf, TBlf, Phil
Goh	Ach, Aff, Tchr
McGinn	TKnw, Tchg
Silver	Patt, TKnw, M/D
Vaden-Kiernan	Tchr, TAtt
Watson	TKnw, Isrv, Lrng
Weiss	TKnw, Curr, Tchg
Weiss	Prsv, TBlf, TKnw
White	Soc, TBlf, Blf

Arithmetic (Arth);
Addition, subtraction (A/S);
Decimals (Decm);
Equivalence, proportions (Eqv);
Estimation (Est);
Fractions, rational numbers (Frac);
Integers (Int);
Multiplication, division (M/D);
Number sense (NSns);
Place value, numeration (PlcV);
Ratio, proportion, percent (RaPc);
Whole numbers (Whol)

Dissertations

Baker	Frac, Manp, Lrng
Boulet	Frac, Lrng, Tchg
Chao	Manp, NSns
Cisse	A/S, Lrng
Corbin	M/D, PS, Plan
D'adamo	LD, Est
Fiol	RaPc, PS
Fox	A/S, Ach, Lrng
Gibb	LD, M/D, CIln
Golding	Frac, Mteg, Prsv
Gomez	Lrng, Arth, A/S
Goodson-Espy	Alg, Arth, PS
Gullanartsiri	M/D, Decm, Curr
Hancock	Est, Manp, PS
Harrison	CC, Frac, Lrng
Haynes-Gainey	RaPc, Grpg, Lrng
Igboko	CAI, A/S, M/D
Isaacs	Whol, Lrng, Curr
Ismail	Assm, Arth, D/R
Kelly	LD, Lrng, M/D
Kline	NSns, PlcV, PS
Kolnowski	NSns, Lrng, PS
Koscinski	LD, CAI, M/D
Lee	Frac, D/R, Assm
Lemai	LD, Frac
Lyons	Lang, A/S, PS
Morales	A/S, Ethn, Lang
Muehlman	Ach, M/D, Curr
Niemi	Frac, Assm
Parker	RaPc, PS, Ach
Plemons	NSns, Lrng, Tchg
Poirier	LD, Comp, NSns
Ross	Manp, M/D, Lrng
Selisky	Int, Att
Smith	NSns, PlcV, Lrng

Stephens	Assm, Arth
Vezina	NSns, Lrng
Vincent	M/D, A/S, Lrng
Vrooman	PS, Patt, Frac
Weber	NSns, Frac, Decm
Williams	RaPc, Comp
Williamson	Wrt, RaPc, Lang
Zuskin	Ach, Frac, Aff

Articles

Asheraft	Arth, Revw, Lrng
Asheraft	Arth, Matl
Baroody	NSns, LD
Bonotto	NSns, Frac, Decm
Brysbaert	Lang, PlcV, Rep
Cai	CC, PS, M/D
Cipoletti	PlcV, Arth , LD
Cobb	Manp, PlcV, Lrng
Empson	Impl, Frac
Ferrari	Tchg, NSns
Fischbein	NSns, Blf
Fong	RaPc, PS, D/R
Funkhouser	NSns, A/S, LD
Gill	Lrng, PS, A/S
Gutstein	A/S, Revw, Lrng
Harel	M/D, PS, Istv
Hativa	Arth, Comp, PS
Hegarty	PS, Arth
Joram	NSns, Soc, Frac
Kamii	Frac, M/D, Lrng
Kern	Curr, Arth, Meas
Kouba	M/D, Lrng, Impl
Lemaire	M/D, Ach
Lynch	Comp, Frac, Decm
Mack	Frac, Whol, Lrng
McIntosh	CC, Arth
McNamara	M/D, Calc, Ach
McNeal	A/S, Lrng
Menon	Frac, Decm, PS
Miller	Arth, Ach, A/S
Miller	NSns, CC, Lang
Morris	Frac, Lrng
Orton	Frac, Prf, Revw
Parker	RaPc, Lrng, Revw
Putt	Decm, Prsv, CC
Rabinowitz	Arth, PS, A/S
Reys	Arth, Ethn, Att, Rep, PS
Rudnitsky	A/S, PS, Writ
Sakamoto	PS, Arth, Frac
Schmidt	PS, M/D
Siegler	NSns, Lrng, PS
Smith	Frac, Eqv
Sophian	NSns, Lrng
Sophian	NSns, Eqv, Rep
Sophian	A/S, PS
Sophian	NSns, Eqv
Thomas	Rep, PlcV
Van Den Heuvel-Panhuizen	Assm, RaPc
Vitulli	Arth, Gend, Lrng
Watanabe	Frac, Whol, Lrng
Watson	Frac, Decm
Wynn	NSns, Lrng
Yang	CC, PlcV, Ach

Papers

English	PS, Arth, NSns
Fasko	Arth, D/R, Grpg
Harel	M/D, RaPc, Lrng
Silver	Patt, TKnw, M/D

Assessment, evaluation (Assm)

Dissertations

Atkins	Cals, Curr, Assm
Becker	Assm, Tech, Curr
Cai	CC, Ach, Assm
Edwards	Ach, Tchg, Assm
Fine	Alg, Assm
Gierl	Assm, Lrng
Haguel	Assm, Cals, Lrng
Halpin	Stat, Assm, Rsch
Hancock	Alg, Assm, Curr
Hechler	Curr, Assm
Hintz	Assm, Gend, Soc
Hunnicutt	PS, Ach, Assm
Ismail	Assm, Arth, D/R
Jaime-Pastor	Geom, Assm, D/R
Jamison	Ach, Assm, Cals
Kusch	Assm, Plan, Clln
Lee	Frac, D/R, Assm
Mainville-Lanthier	Ach, Comp, Assm
Morris	D/R, Assm
Nguyen	Stat, Assm, Curr
Niemi	Frac, Assm
Patterson	Ach, Assm, D/R
Penta	Assm, D/R
Rhine	Lang, Assm, Mteg
St-Pierre	Assm, PS
Stephens	Assm, Arth
Telese	Soc, Assm, Ach

Van Stone	Comp, Clln, Assm
Wachtel	Assm
Walker	D/R, Ach, Assm
Ward	Comp, Assm, Att
Wholeben	AdvM, Lrng, Assm
Woodward	Curr, Assm, Comp

Articles

Bauman	Assm, D/R, Ach
Chandler	Assm, Curr
Davies	Assm, Curr, Ach
Feldhusen	Ach, Gift,Assm
Hasemann	Lrng, Assm
Hirst	Lrng, AdvM, Assm
Jordan	Assm, LD
Knight	Knw, IC, Assm
Lefton	Cals, Tech, Assm
Odell	Assm, Alg, D/R
Robinson	Assm, Impl, Tchg
Shannon	Blf, Assm, Revw
Van Den Heuvel-Panhuizen	Assm, RaPc
Watson	Ach, Assm, Lrnr

Papers

"Are our high..."	Assm, Ethn, Gend
Beaman	Tchg, Assm, Alg
Blank	Curr, Assm
Daly	Assm, Rsch, Ach
Fan	Gend, Ach, Assm
Lindquist	Ach, Assm, Impl
Pajares	Assm, Blf, Ach
Rhine	Lang, Assm, CC
Schalago-Schirm	CAI, Ach, Assm
Sharp	Assm, Ethn

Calculators (general) (Calc);
Computer-assisted instruction (CAI);
Computers (general) (Comp);
Technology (general) (Tech);
Graphing calculators (GCal)

Dissertations

Adams	Alg, GCal, Lrng
Alkhateeb	Att, Ach, GCal
Austin	Tech, Alg, Ach
Barnes	Tech, TBlf
Becker	Assm, Tech, Curr
Blood	Comp, Wrt, Lang
Bohn	D/R, Ach, CAI
Brehmer-Evans	Comp, Ach, IC
Caldwell	GCal, Lrng, Alg
Chen	Comp, PS, Ach
Connors	Comp, Ach, Gend
Coston	GCal, Alg, Grpg
Covalt	Comp, PS
Doerr	Comp, Geom, Rep
Donnelly	D/R, Ach, CAI
Dorn	Comp, Stat, PS
Dyer	Comp, Alg, Ach
Edwards	Comp, Lrng, Gend
Fasse	Comp, Plan
Foletta	Geom, Comp
Fyfe	PS, Comp, Alg
Galindo	Comp, Geom, Styl
Grapin	Tech, Att, Soc
Hamilton	Ach, CAI
Hewitt	Comp, Lrng
Houle	IC, Geom, Tech
Igboko	CAI, A/S, M/D
Jia	Styl, Comp, Att
Johnson	Clln, TBlf, GCal
Jones	Calc, Ach, LD
Kim	Comp, Ach, Aff
Klages	Comp, TAtt
Koscinski	LD, CAI, M/D
Larson	Tech, Ach, Blf
Laub	Ach, Comp
Liles	IC, PS, Tech
Loggins	Alg, Comp, Rep
Long	Comp, TAtt
Mainville-Lanthier	Ach, Comp, Assm
Manouchehri	Comp, Geom, Patt
May	Cals, Att, GCal
Nath	Calc, Tchg, Clln
Nicol	Tech, GCal, TBlf
Niederhauser	Att, Comp, Ach
Norris	GCal, Alg, Ach
O'callaghan	Comp, Alg, Curr
Olsen	Alg, Comp
Oster	GCal, Lrng, Cals
Padgett	Cals, Ach, Comp
Pagnucco	Tech, Tchg, Lrng
Pankow	Alg, GCal, Ach
Paschal	Tech, Alg, GCal
Poirier	LD, Comp, NSns
Porzio	Comp, PS, Cals
Royo	Geom, CAI
Ryan	CAI, Ethn, Soc
Sadatmand	Alg, PS, CAI

Santiago-Collazo Comp, Geom, PS
Scott Alg, GCal, Ach
Shiah PS, LD, CAI
Simmt GCal, TBlf, Tchg
Slavit Alg, GCal, Lrng
Stiles GCal, Cals, Att
Van Comp, Clln, Assm
Vodounon Comp, Alg, Lrng
Walsh PS, Comp
Ward Comp, Assm, Att
Weissman Comp, PS, Mtcg
Wilkins Alg, GCal, Ach
Williams RaPc, Comp
Williams Comp, Tech, PS
Woodward Curr, Assm, Comp
Zieberth Tech, Grpg, Isrv

Articles
Bos Tech, Prsv, Impl
Bridgeman Calc, Gend, Ethn
Dugdale Tech, Alg
Edwards Comp, Geom, PS
Fleener TBlf, Calc, Phil
Hativa Arth, Comp, PS
Healy Grpg, Comp
Kitz Alg, Tech, LD
Lefton Cals, Tech, Assm
Lynch Comp, Frac, Decm
McNamara M/D, Calc, Ach
Moreira TAtt, Comp
Nguyen-Xuan Comp, Alg, PS
Phillips Tech
Ruthven Calc, Att, Blf
Schwarz Rep, Cals, Comp
Shashaani Comp, Gend, Att
Shiah PS, LD, CAI
Wilensky Prob, Tech, Lrng
Woodward Comp, LD, Revw
Yusuf Comp, Tchg, Geom

Papers
Anderman Blf, Tech, Aff
Doerr IC, Rep, Comp
Hodes Gend, Tech
Martin GCal, Alg, PS
Rogan Tech, Comp, Isrv
Sawyer Curr, Tchg, Tech
Schalago-Schirm CAI, Ach, Assm
Schmidt Calc, Tchg
Watterson Tech, PS, Isrv

Grouping for instruction, cooperative learning (Grpg); Planning, descision making (Plan); Teaching (role, style, methods) (Tchg)

Dissertations
Anku Grpg, Lrng, Comm
Belanus Curr, Tchg, Patt
Berte Lrng, Tchg
Boulet Frac, Lrng, Tchg
Brancov Grpg, Ethn, Ach
Cabral-Pini Grpg, Ethn, Att
Chung Lrng, Tchg, IC
Cobbs IC, Tchg, Curr
Cooper Prsv, Tchg, Lrng
Corbin M/D, PS, Plan
Coston GCal, Alg, Grpg
Cowen Curr, Tchg
Davis Tchg, TBlf, Isrv
Davis Phil, Tchg, Lrng
Delyon Curr, Plan
Diamantis Manp, Tchg
Duncan Tchg, Tchr
Edwards Ach, Tchg, Assm
Eizen PS, Tchg, Isrv
Fasko Grpg, Ach, LD
Fasse Comp, Plan
Fernandez Lrng, Tchg
Fiske Cals, Tchg, Lrng
Fitzsimmons Grpg, Cals, Lrng
Gadanidis Prsv, Tchg, TBlf
Garegae-Garekwe Tchg, Ethn
Gattuso TBlf, TAtt, Tchg
Goff Grpg, Ach
Gordon Grpg, Oral
Grewer Curr, Tchg
Gross Att, Tchg, Ethn
Haney Grpg, PS, Tchg
Hankes Ethn, Lrng, Tchg
Haynes-Gainey RaPc, Grpg, Lrng
Heaton Isrv, Curr, Plan
Holley Grpg, Aff, Tchg
Hughes Ach, Lrng, Tchg
Hunt Gift, Att, Grpg
Ibe Soc, Ach, Tchg
Kalustian PS, Ethn, Grpg
Keezer Tchg, Isrv, Comm
Kelly Att, Gend, Grpg
Kinel Grpg, Ach, Ethn
Kiragu Tchg, TBlf

Kusch	Assm, Plan, Clln
Lee	TKnw, Plan, Prsv
Lesser	Tchg, Stat
Mckenzie	D/R, Curr, Tchg
Mcnair	Oral, Grpg, Soc
Mullinix	D/R, Curr, Tchg
Nath	Calc, Tchg, Clln
O'brien	Grpg, Att, Alg
Pagnucco	Tech, Tchg, Lrng
Plemons	NSns, Lrng, Tchg
Puig	PS, Tchg, Lrng
Rackley	Tchg, Curr
Rice	Soc, Tchg, Ach
Riordan	Ach, Tchg
Rolfs	Isrv, Ach, Grpg
Shealy	Tchg, TBlf, Lrng
Simmt	GCal, TBlf, Tchg
Slater	Wrt, Lang, Tchg
Spatzer	LD, Grpg, Oral
Sztajn	Curr, Tchg
Tompkins	Att, Gend, Grpg
Van Zoest	Grpg, Oral, Mtcg
Wagner	Clln, Plan
Wilkerson	Tchg, TBlf
Williams	Alg, Tchg, Ach
Zieberth	Tech, Grpg, Isrv

Articles

Anders	TKnw, Tchg, Isrv
Burton	Gend, Phil, Tchg
Bussi	Rsch, Tchg, Oral
Cardelle-Elawar	Tchg, Mtcg, Ethn
Chard	Tchg, LD, Impl
Comiti	Tchg, Oral, Knw
Confrey	Tchg, Alg, Lrng
Corbin	PS, Grpg , Plan
deMesquita	Tchg, Grpg, Plan
Even	TKnw, Lrnr, Plan
Ferrari	Tchg, NSns
Fuligni	Grpg, Ach
Garet	Tchg, Alg
Healy	Grpg, Comp
Henderson	IC, Ethn, Grpg
Hersberger	Grpg, Impl
Jaime	Impl, Tchg, Geom
Knapp	Tchg, TBlf, Isrv
Montague	Tchg, LD, Lrnr
Mulryan	Grpg, Tchg
Murrell	Oral, Tchg, Ethn
Naglieri	Plan, LD, Ach
Norwood	PS, Grpg, Ach
Oliver	Tchg, Curr, Ach
Qin	Grpg, PS, Revw
Rickard	Curr, Tchg, PS
Robinson	Assm, Impl, Tchg
Ross	Grpg, Att
Simon	Tchg, Lrng, Prsv
Simon	Tchg, Lrng, Knw
Solar	Gend, Tchg, Revw
Steffe	Tchg, Lrng, Knw
Swetz	TKnw, Tchg
Webb	Grpg, Lrng, Ach
Yusuf	Comp, Tchg, Geom

Papers

Beaman	Tchg, Assm, Alg
Fasko	Arth, D/R, Grpg
Harding	D/R, Alg, Grpg
Huinker	Isrv, Tchg, Curr
Ireland	Att, Soc, Tchg
Jaworski	Tchg, Lrng, Rsch
McGinn	TKnw, Tchg
Meador	Curr, Tchg, PS
Nesbit	Tchg, Att, Soc
Nichols	Grpg, Ach, Aff
Sawyer	Curr, Tchg, Tech
Schmidt	Calc, Tchg
Van Zoest	Prsv, Tchg
Weiss	TKnw, Curr, Tchg
Westbury	Tchg, Gend, Soc

Classroom interaction (Clln)
Communications (Comm);
Oral communication, classroom discourse (Oral);
Writing, journals (Writ)

Dissertations

Anku	Grpg, Lrng, Comm
Diello	Oral, Clln
Gibb	LD, M/D, Clln
Gordon	Grpg, Oral
Hartog	TBlf, Oral, Clln
Hillen	Comm, Lrng, IC
Horsey	Ach, Clln
Ivey	Blf, Soc, Clln
Johnson	Curr, Clln, Tchg
Johnson	Clln, TBlf, GCal
Kahn	Oral

Keezer	Tchg, Isrv, Comm
Kusch	Assm, Plan, Clln
Longo	Curr, Oral, Clln
Maro	Lang, PS, Comm
Mcnair	Oral, Grpg, Soc
Nath	Calc, Tchg, Clln
Nicholas	Mtcg, Comm, Writ
Pennett	Ach, LD, Comm
Piazza	Lrng, Comm, Clln
Pimm	Lang, Oral, Clln
Schloemer	Alg, Ach, Clln
Simonsen	TBlf, Cals, Clln
Spatzer	LD, Grpg, Oral
Uccellini	Geom, Prf, Comm
Van Stone	Comp, Clln, Assm
Van Zoest	Grpg, Oral, Mtcg
Wagner	Clln, Plan
Wilson	Stat, Curr, Writ

Articles

Adler	Lang, Ethn, Oral
Beidleman	Cals, Writ, Ach
Bussi	Rsch, Tchg, Oral
Chambers	Lrng, Oral, Impl
Comiti	Tchg, Oral, Knw
Madsen	Lrng, Comm, PS
Murrell	Oral, Tchg, Ethn
Robert	Oral
Rudnitsky	A/S, PS, Writ
Taole	Gend, Oral, Ethn

Papers

Atweh	Soc, Oral, Gend
Kieren	Lrng, Blf, Oral
Kjos	PS, Writ, Att
Phillips	Writ, Lrng
Rillero	Writ, Lrng

Cross-cultural (CC);
Ethnic, racial (Ethn);
Social factors, context, parents (Soc)

Dissertations

Adamson	Curr, Soc
"Are our high..."	Assm, Ethn, Gend
Bailey	Soc, Ach, Aff
Blair	Curr, Soc
Brancov	Grpg, Ethn, Ach
Cabral-Pim	Grpg, Ethn, Att
Cai	CC, Ach, Assm
Cobb	Curr, Alg, Soc
Coombs	Curr, Soc
Cordeau	Gend, Soc, Att
Correll	Lang, Curr, CC
Cousins	Ethn, Soc, Ach
Fouche	PS, Mtcg, CC
Franklin	Ethn, Ach, Curr
Garegae-Garekwe	Tchg, Ethn
Goins	Soc, Ach, Att
Golden	Ethn, Ach, D/R
GrapinT	ech, Att, Soc
Gross	Att, Tchg, Ethn
Hankes	Ethn, Lrng, Tchg
Harris	Ethn, Soc
Harrison	CC, Frac, Lrng
Herman	CC, Ach, Rep
Hintz	Assm, Gend, Soc
Ibe	Soc, Ach, Tchg
Ivey	Blf, Soc, Clln
Kalustian	PS, Ethn, Grpg
Kinel	Grpg, Ach, Ethn
Maple	Gend, Soc, Att
Mather	Blf, Ethn
Mcnair	Oral, Grpg, Soc
Mokatrin	Ethn, Ach, Soc
Montes	Ethn, Lang, PS
Morales	A/S, Ethn, Lang
Perry	Ethn, Att, Anx
Pruett	Gend, Soc, Ach
Purdy	Curr, Soc, Prob
Renne	Curr, Soc, Lrng
Rice	Soc, Tchg, Ach
Rice	Ach, Soc
Roberson	Gend, Ach, Ethn
Roberts	Ethn, Ach
Ryan	CAI, Ethn, Soc
Sachs	Anx, Soc, Att
Schnaithman-Vincent	Soc, Ach, Gend
Teague	Ethn, Gend, Ach
Telese	Soc, Assm, Ach
Wang	CC, Gend, Lrng
Williams	Ethn, Gend, Curr
Wort	Soc, Ethn
Wright	Att, Ach, Ethn

Articles

Adler	Lang, Ethn, Oral
Atweh	Gend, Soc, Curr
Ayalon	Ethn, Gend, CC

Bridgeman	Calc, Gend, Ethn
Cai	CC, PS, M/D
Cardelle-Elawar	Tchg, Mtcg, Ethn
Chen	CC, Ach, Aff
Confrey	Lrng, Soc
Erickson	Prsv, Rsch, Soc
Fantuzzo	Soc, Aff, Ach
Frid	Lrng, Soc, TAtt
Fuligni	CC, Ach, Soc
Henderson	IC, Ethn, Grpg
Jiang	CC, Curr
Jones	Gend, Att, Soc
Joram	NSns, Soc, Frac
Leron	AdvM, Ethn, Lrng
Ma	Ach, Att, Ethn
Macmillan	Att, Soc
Mayer	CC, Matl, PS
McIntosh	CC, Arth
Miller	NSns, CC, Lang
Murrell	Oral, Tchg, Ethn
Olszewski-Kubilius	Gift, Ethn, Gend
Putt	Decm, Prsv, CC
Reys	Arth, Ethn, Att, Rep, PS
Satake	Ach, CC, Anx
Seymour	Gend, Ethn, Soc
Silver	CC, PS,Gend
Taole	Gend, Oral, Ethn
Triadafillidis	Geom, Vis, CC
Vithal	Ethn, Blf
Yang	CC, PlcV, Ach

Papers

Atweh	Soc, Oral, Gend
Brazziel	Ethn
Civil	Ethn, Curr, Lrng
Ernest	Phil, Soc, Lrng
Grandy	Gend, Ethn
HofferGend, Ethn, Ach	
Ireland	Att, Soc, Tchg
Meyinsse	Soc, Ach, Ethn
Nesbit	Tchg, Att, Soc
Owens	Lrng, Rsch, Soc
Peng	Ethn, CC, Ach
Rhine	Lang, Assm, CC
Sharp	Assm, Ethn
Sierpinska	Soc, Lrng, Phil
Westbury	Tchg, Gend, Soc
White	Soc, TBlf, Blf

Curriculum, programs (Curr); Diagnosis, remedial mathematics (D/R); Integrated curriculum (IC); Manipulatives (Manp); Materials (texts, other resources) (Matl)

Dissertations

Adamson	Curr, Soc
Atkins	Cals, Curr, Assm
Baker	Frac, Manp, Lrng
Bates	Alg, D/R
Beaton	Anx, Lrng, D/R
Becker	Assm, Tech, Curr
Belanus	Curr, Tchg, Patt
Benes-Lafferty	Curr, Ach, Att
Bisse	Anx, D/R
Blair	Curr, Soc
Bohn	D/R, Ach, CAI
Brehmer-Evans	Comp, Ach, IC
Chao	Manp, NSns
Chung	Lrng, Tchg, IC
Cobb	Curr, Alg, Soc
Cobbs	IC, Tchg, Curr
Coombs	Curr, Soc
Correll	Lang, Curr, CC
Cowen	Curr, Tchg
Crates	IC, D/R, Ach
Delyon	Curr, Plan
Diamantis	Manp, Tchg
Donnelly	D/R, Ach, CAI
Erickson	Isrv, Curr, Mtcg
Franklin	Ethn, Ach, Curr
Gibbons	Curr, Ach, Att
Golden	Ethn, Ach, D/R
Grant	Curr, TAtt
Grewer	Curr, Tchg
Gullanartsiri	M/D, Decm, Curr
Hancock	Alg, Assm, Curr
Hancock	Est, Manp, PS
Heaton	Isrv, Curr, Plan
Hechler	Curr, Assm
Hillen	Comm, Lrng, IC
Houle	IC, Geom, Tech
Isaacs	Whol, Lrng, Curr
Ismail	Assm, Arth, D/R
Jaime-Pastor	Geom, Assm, D/R
Johnson	Curr, Clln, Tchg
Kanai	Alg, Manp, Ach
Kneese	Ach, Curr

Lee Frac, D/R, Assm
Liles IC, PS, Tech
Longo Curr, Oral, CIIn
Mayers Ach, Alg, Curr
Mckenzie D/R, Curr, Tchg
Mcshea Curr, Ach, Gend
Mireles Att, Lrng, IC
Mixon Att, Curr
Morris D/R, Assm
Muehlman Ach, M/D, Curr
Mullinix D/R, Curr, Tchg
Nguyen Stat, Assm, Curr
O'brien Curr, Lrng, Isrv
O'callaghan Comp, Alg, Curr
Patterson Ach, Assm, D/R
Penta Assm, D/R
Price D/R, Curr
Purdy Curr, Soc, Prob
Rackley Tchg, Curr
Renne Curr, Soc, Lrng
Rentschler Curr, Ach, Lrng
Ross Manp, M/D, Lrng
Schneider Cals, Curr, Lang
Segars Ach, Curr
Stephens D/R, Ach
Stewart Lang, PS, D/R
Sztajn Curr, Tchg
Turegano Manp, Cals, Lrng
Wade PS, Curr, Ach
Walker D/R, Ach, Assm
Wilding D/R
Williams Ethn, Gend, Curr
Williams Cals, Lrng, Curr
Wilson Stat, Curr, Writ
Woodward Curr, Assm, Comp

Articles

Ashcraft Arth, Matl
Atweh Gend, Soc, Curr
Bauman Assm, D/R, Ach
Bell Alg, Ach, Curr
Chandler Assm, Curr
Cobb Manp, PleV, Lrng
Davies Assm, Curr, Ach
Fong RaPc, PS, D/R
Fujioka Curr, Att, Knw
Henderson IC, Ethn, Grpg
Jiang CC, Curr
Kern Curr, Arth, Meas
Knight Knw, IC, Assm
LeBlanc Aff, Prsv, Manp
Mason Geom, LD, D/R
Mayer CC, Matl, PS
Odell Assm, Alg, D/R
Oliver Tchg, Curr, Ach
Rickard Curr, Tchg, PS
Swinson Isrv, Curr
Warren Geom, Vis, Manp
Wolf Geom, Meas, Manp

Papers

Blank Curr, Assm
Civil Ethn, Curr, Lrng
Doerr IC, Rep, Comp
Edwards Isrv, Tchr, Curr
Edwards Curr, Tchr, Lrng
Ernest Manp, Alg, Geom
Fasko Arth, D/R, Grpg
Harding D/R, Alg, Grpg
Huinker Isrv, Tchg, Curr
Meador Curr, Tchg, PS
Raymond Curr, PS, Rsch
Rieck Alg, Att, Curr
Sawyer Curr, Tchg, Tech
Weiss TKnw, Curr, Tchg

Discrete mathematics (DscM); Probability (Prob); Statistics (Stat)

Dissertations

Dorn Comp, Stat, PS
Halpin Stat, Assm, Rsch
Hong Stat, Att
Kimmins Prob, Patt, Lrng
Lesser Tchg, Stat
Mcarthur Prob, Lrng, DscM
Nguyen Stat, Assm, Curr
Purdy Curr, Soc, Prob
Sullivan Styl, Lrng, Stat
Wilson Stat, Curr, Writ

Articles

Anazonwu Stat, Aff, Ach
Bessant Anx, Stat
Garfield Prob, Stat, Lrng
Gras Prob, Stat, PS
Madsen Prob, Lrng
Mokros Lrng, Stat, Rep

Nolen Aff, Stat, Gend
Onwuegbuzie Stat, Anx, Ach
Schau Stat, Aff
Wilensky Prob, Tech, Lrng

Gender differences (Gend)

Dissertations

Brownridge Gend, Anx, Att
Connors Comp, Ach, Gend
Cordeau Gend, Soc, Att
Edwards Comp, Lrng, Gend
Fair Blf, Ach, Gend
Harper Gend, Aff, Lrnr
Hintz Assm, Gend, Soc
Kelly Att, Gend, Grpg
Laberge Prsv, Gend, TAtt
Maple Gend, Soc, Att
Mcshea Curr, Ach, Gend
Mohamad-Ali Ach, Att, Gend
Pruett Gend, Soc, Ach
Roberson Gend, Ach, Ethn
Saleh Cals, Gend, Aff
Schnaithman-Vincent Soc, Ach, Gend
Springer Gend, Anx, Att
Stockton Alg, Gend, Att
Teague Ethn, Gend, Ach
Tompkins Att, Gend, Grpg
Wang CC, Gend, Lrng
Williams Ethn, Gend, Curr

Articles

Atweh Gend, Soc, Curr
Ayalon Ethn, Gend, CC
Bridgeman Calc, Gend, Ethn
Burton Gend, Phil, Tchg
Casey Vis, Gend, Ach
Forgasz Gend, Aff, Blf
Friedman Vis, Gend, Revw
House Ach, Gend, Aff
Jones Gend, Att, Soc
Leder Ach, Gift, Gend
Leeson Gend, Ach
Lord Vis, Gend, Prsv
Manger Ach, Gend
Nolen Aff, Stat, Gend
Olszewski-Kubilius Gift, Ethn, Gend
Ravaglia Gift, Cals, Gend
Seymour Gend, Ethn, Soc
Shashaani Comp, Gend, Att
Silver CC, PS,Gend
Solar Gend, Tchg, Revw
Steinback Gend, Att
Taole Gend, Oral, Ethn
Tartre Ach, Gend, Aff
Terwilliger Att, Gift, Gend
Vitulli Arth, Gend, Lrng

Papers

"Are our high..." Assm, Eth, Gend
Atweh Soc, Oral, Gend
Fan Gend, Ach, Assm
Grandy Gend, Ethn
Gutbezahl Revw, Gend, Att
Hodes Gend, Tech
Hoffer Gend, Ethn, Ach
Linn Revw, AdvM, Gend
Pajares Ach, Blf, Gend
Stanley Gend, Aff, Gift
Westbury Tchg, Gend, Soc
"Women and K-12..." Gend, Ach

Geometry (Geom); Measurement (Meas); Spatial visualization (Vis)

Dissertations

Byron PS, Styl, Vis
Dennis Geom, Cals, Alg
Doerr Comp, Geom, Rep
Foletta Geom, Comp
Frerking Geom, Prf, Lrng
Galindo Comp, Geom, Styl
Galindo-Morales Cals, Styl, Vis
Houle IC, Geom, Tech
Jaime-Pastor Geom, Assm, D/R
Krussel Lrng, Vis, AdvM
LockwoodAch, Alg, Geom
Manouchehri Comp, Geom, Patt
Pandiscio Geom, Ach, Vis
Pepin Lang, Geom, Lrng
Prupas Geom, Mtcg, Lrng
Reinke Geom, Lrng, TAtt
Royo Geom, CAI
Santiago-Collazo Comp, Geom, PS
Schrier Geom, Lrng, Vis
Sundberg Geom, Ach, Vis
Uccellini Geom, Prf, Comm

Articles
Armstrong Meas, Rep
Battista Geom, Prf, Revw
Bryant LD, Geom, Impl
Campbell PS, Vis, Lrng
Casey Vis, Gend, Ach
Edwards Comp, Geom, PS
Friedman Vis, Gend, Revw
Jaime Impl, Tchg, Geom
Jordan LD, Vis, Lang
Kern Curr, Arth, Meas
Lord Vis, Gend, Prsv
Markovits Lrng, Rep, Vis
Mason Geom, LD, D/R
Mousavi Geom, Lrng, Vis
Nicholls Lrng, Vis
Shah Rep, Alg, Vis
Triadafillidis Geom, Vis, CC
Warren Geom, Vis, Manp
Wolf Geom, Meas, Manp
Yusuf Comp, Tchg, Geom

Paper
Ernest Manp, Alg, Geom

Gifted (students) (Gift);
Knowledge (student's) (Knw);
Learners (characteristics of) (Lrnr);
Learning disabled (LD);
Learning style, cognitive style (Styl);

Dissertations
Abrahamson Ach, LD, Lang
Biggerstaff PS, Styl, Mtcg
Byron PS, Styl, Vis
D'adamo LD, Est
Fasko Grpg, Ach, LD
Fogarty PS, Styl, Tchr
Galindo Comp, Geom, Styl
Galindo-Morales Cals, Styl, Vis
Gibb LD, M/D, Clln
Harper Gend, Aff, Lrnr
Hunt Gift, Att, Grpg
Huntington LD, Alg, Rep
Jha Styl, Comp, Att
Jones Calc, Ach, LD
Kelly LD, Lrng, M/D
Kidd Lang, Isrv, LD
Kinsella Lrnr, Ach
Koscinski LD, CAI, M/D
Lemar LD, Frac
Pennett Ach, LD, Comm
Porter LD, Comp, NSns
Rupp Ach, LD
Shuah PS, LD, CAI
Spatzer LD, Grpg, Oral
Sullivan Styl, Lrng, Stat
Tumminello Anx, Ach, Styl
Zang Styl, PS

Articles
Baroody NSns, LD
Bryant LD, Geom, Impl
Chard Tchg, LD, Impl
Cipoletti PlcV, Arth , LD
Comiti Tchg, Oral, Knw
Even TKnw, Lrnr, Plan
Feldhusen Ach, Gift,Assm
Fujioka Curr, Att, Knw
Funkhouser NSns, A/S, LD
Jordan Assm, LD
Jordan LD, Vis, Lang
Kitz Alg, Tech, LD
Knight Knw, IC, Assm
Kupermintz Rsch, Ach, Lrnr
Leder Ach, Gift, Gend
Mason Geom, LD, D/R
Meira Rep, PS, Knw
Montague Tchg, LD, Lrnr
Naglieri Plan, LD, Ach
Olszewski-Kubilius Gift, Ethn, Gend
Ravaglia Gift, Cals, Gend
Shuah PS, LD, CAI
Simon Tchg, Lrng, Knw
Steffe Tchg, Lrng, Knw
Taplin PS, Att, Lrnr
Terwilliger Att, Gift, Gend
Watson Ach, Assm, Lrnr
Woodward Comp, LD, Revw

Papers
Ernest Lrng, Styl, Rsch
Hauger Cals, Lrng, Knw
Masingila Blf, Knw, Rep
Stanley Gend, Aff, Gift

Implications of research, interpretations of research (Impl); Research issues, methods (Rsch); Reviews of research (Revw)

Dissertation

Halpin — Stat, Assm, Rsch

Articles

Ashcraft — Arth, Revw, Lrng
Battista — Geom, Prf, Revw
Bos — Tech, Prsv, Impl
Bryant — LD, Geom, Impl
Bussi — Rsch, Tchg, Oral
Chambers — Lrng, Oral, Impl
Chard — Tchg, LD, Impl
Dengate — Lrng, Revw
Empson — Impl, Frac
Erickson — Prsv, Rsch, Soc
Friedman — Vis, Gend, Revw
Galbraith — Impl, PS, Prf
Gutstein — A/S, Revw, Lrng
Hersberger — Grpg, Impl
Jaime — Impl, Tchg, Geom
Kouba — M/D, Lrng, Impl
Kupermintz — Rsch, Ach, Lrnr
Orton — Frac, Prf, Revw
Parker — RaPc, Lrng, Revw
Qin — Grpg, PS, Revw
Robinson — Assm, Impl, Tchg
Saul — Rsch, Lrng
Shannon — Blf, Assm, Revw
Solar — Gend, Tchg, Revw
Woodward — Comp, LD, Revw

Papers

Bell — Rsch, Lrng
da Ponte — Rsch, Lrng, Phil
Daly — Assm, Rsch, Ach
Ernest — Lrng, Styl, Rsch
Gutbezahl — Revw, Gend, Att
"Highlights of research..." — Revw, Rsch
Jaworski — Tchg, Lrng, Rsch
Kirshner — Rsch, Lrng, Phil
Kirshner — Rsch, Lrng, Aff
Lindquist — Ach, Assm, Impl
Linn — Revw, AdvM, Gend
Owens — Lrng, Rsch, Soc
Raymond — Curr, PS, Rsch
Wagner — Rsch

Inservice teacher education, professional development (Isrv); Preservice teacher education (Prsv)

Dissertations

Clarke — Rep, Patt, Prsv
Cooper — Prsv, Tchg, Lrng
Davis — Tchg, TBlf, Isrv
Etzen — PS, Tchg, Isrv
Erickson — Isrv, Curr, Mtcg
Frost — Isrv, TBlf, TKnw
Gadanidis — Prsv, Tchg, TBlf
Geskus — Blf, Prsv
Golding — Frac, Mtcg, Prsv
Harper — TBlf, Anx, Prsv
Heaton — Isrv, Curr, Plan
Keezer — Tchg, Isrv, Comm
Kidd — Lang, Isrv, LD
Kistler — TKnw, Prsv
Laberge — Prsv, Gend, TAtt
Lee — TKnw, Plan, Prsv
O'brien — Curr, Lrng, Isrv
Rolfs — Isrv, Ach, Grpg
Walsh-Cavazos — Isrv, TAtt, Ach
Zieberth — Tech, Grpg, Isrv

Articles

Anders — TKnw, Tchg, Isrv
Bos — Tech, Prsv, Impl
Erickson — Prsv, Rsch, Soc
Harel — M/D, PS, Isrv
Jones — Prsv, TKnw, Lrng
Knapp — Tchg, TBlf, Isrv
LeBlanc — Aff, Prsv, Manp
Lord — Vis, Gend, Prsv
McDevitt — Prsv, TKnw, TBlf
Putt — Decm, Prsv, CC
Simon — Tchg, Lrng, Prsv
Swinson — Isrv, Curr
Edwards — Isrv, Tchr, Curr
Huinker — Isrv, Tchg, Curr
Rogan — Tech, Comp, Isrv
Van Zoest — Prsv, Tchg
Watson — TKnw, Isrv, Lrng
Watterson — Tech, PS, Isrv
Weiss — Prsv, TBlf, TKnw

Language, psycholinguistics (Lang); Representations, modelling (Rep)

Dissertations

Abrahamson — Ach, LD, Lang
Blood — Comp, Wrt, Lang
Clarke — Rep, Patt, Prsv
Correll — Lang, Curr, CC
Doerr — Comp, Geom, Rep
Herman — CC, Ach, Rep
Huntington — LD, Alg, Rep
Kidd — Lang, Isrv, LD
Loggins — Alg, Comp, Rep
Maro — Lang, PS, Comm
Montes — Ethn, Lang, PS
Morales — A/S, Ethn, Lang
Pepin — Lang, Geom, Lrng
Pimm — Lang, Oral, Clln
Rhine — Lang, Assm, Mteg
Schneider — Cals, Curr, Lang
Slater — Wrt, Lang, Tchg
Stewart — Lang, PS, D/R
Williamson — Wrt, RaPc, Lang

Articles

Adler — Lang, Ethn, Oral
Anderson — Alg, Rep
Armstrong — Meas, Rep
Brysbaert — Lang, PlcV, Rep
Jordan — LD, Vis, Lang
MacGregor — Alg, Rep
Markovits — Lrng, Rep, Vis
Meira — Rep, PS, Knw
Miller — NSns, CC, Lang
Mokros — Lrng, Stat, Rep
Reys — Arth, Ethn, Att, Rep, PS
Schwarz — Rep, Cals, Comp
Selden — Prf, Rep
Shah — Rep, Alg, Vis
Sophian — NSns, Eqv, Rep
Thomas — Rep, PlcV

Papers

DeCorte — PS, Blf, Rep
Doerr — IC, Rep, Comp
Masingila — Blf, Knw, Rep
Rhine — Lang, Assm, CC

Learning, learning theories, cognitive development (Lrng); Philosophy, epistemology (Phil)

Dissertations

Adams — Alg, GCal, Lrng
Anku — Grpg, Lrng, Comm
Aspinwall — Cals, Lrng
Baker — Frac, Manp, Lrng
Beaton — Anx, Lrng, D/R
Berger — Alg, PS, Lrng
Berte — Lrng, Tchg
Boulet — Frac, Lrng, Tchg
Caldwell — GCal, Lrng, Alg
Chung — Lrng, Tchg, IC
Cisse — A/S, Lrng
Cook — Lrng, Alg
Cooper — Prsv, Tchg, Lrng
Davis — Phil, Tchg, Lrng
Deulofeu — Alg, Lrng
Edwards — Comp, Lrng, Gend
Fernandez — Lrng, Tchg
Fiske — Cals, Tchg, Lrng
Fitzsimmons — Grpg, Cals, Lrng
Fossa — Phil, Lrng
Fox — A/S, Ach, Lrng
Frerking — Geom, Prf, Lrng
Gamble — PS, Lrng
Gierl — Assm, Lrng
Gomez — Lrng, Arth, A/S
Griffith — Lrng, Att, Aff
Haguel — Assm, Cals, Lrng
Hankes — Ethn, Lrng, Tchg
Harrison — CC, Frac, Lrng
Haynes-Gainey — RaPc, Grpg, Lrng
Hewitt — Comp, Lrng
Hillen — Comm, Lrng, IC
Hodgkins — Lrng, Alg
Hughes — Ach, Lrng, Tchg
Isaacs — Whol, Lrng, Curr
Keen — TKnw, Lrng
Kelly — LD, Lrng, M/D
Kimmins — Prob, Patt, Lrng
Kolnowski — NSns, Lrng, PS
Krussel — Lrng, Vis, AdvM
Lyons — Lrng, A/S, PS
Mcarthur — Prob, Lrng, DscM
Mireles — Att, Lrng, IC
Muntersbjorn — PS, Phil, Lrng
O'brien — Curr, Lrng, Isrv

Oster	GCal, Lrng, Cals
Pagnucco	Tech, Tchg, Lrng
Pepin	Lang, Geom, Lrng
Piazza	Lrng, Comm, CIIn
Plemons	NSns, Lrng, Tchg
Prupas	Geom, Mteg, Lrng
Puig	PS, Tchg, Lrng
Reinke	Geom, Lrng, TAtt
Renne	Curr, Soc, Lrng
Rentschler	Curr, Ach, Lrng
Ross	Manp, M/D, Lrng
Sanders	Alg, Lrng
Schrier	Geom, Lrng, Vis
Shealy	Tchg, TBlf, Lrng
Shelton	Ach, Lrng, Alg
Slavit	Alg, GCal, Lrng
Smith	NSns, PlcV, Lrng
Sullivan	Styl, Lrng, Stat
Tookey	Ach, PS, Lrng
Turegano	Manp, Cals, Lrng
Tyson	Phil, Lrng
Van Akkeren	PS, Ach, Lrng
Vezina	NSns, Lrng
Vincent	M/D, A/S, Lrng
Vodounon	Comp, Alg, Lrng
Wang	CC, Gend, Lrng
Wholeben	AdvM, Lrng, Assm
Williams	Cals, Lrng, Curr

Articles

Ashcraft	Arth, Revw, Lrng
Boekaerts	PS, Lrng, Aff
Burton	Gend, Phil, Tchg
Campbell	PS, Vis, Lrng
Chambers	Lrng, Oral, Impl
Cobb	Lrng, Phil
Cobb	Manp, PlcV, Lrng
Confrey	Lrng, Soc
Confrey	Lrng
Confrey	Tchg, Alg, Lrng
Dengate	Lrng, Revw
Fleener	TBlf, Calc, Phil
Foltz	Prf, Lrng, PS
Frid	Lrng, Soc, TAtt
Garfield	Prob, Stat, Lrng
Gill	Lrng, PS, A/S
Gutstein	A/S, Revw, Lrng
Hasemann	Lrng, Assm
Hirst	Lrng, AdvM, Assm
Jones	Prsv, TKnw, Lrng
Kamii	Frac, M/D, Lrng
Kouba	M/D, Lrng, Impl
Leron	AdvM, Ethn, Lrng
Mack	Frac, Whol, Lrng
Madsen	Lrng, Comm, PS
Madsen	Prob, Lrng
Markovits	Lrng, Rep, Vis
McNeal	A/S, Lrng
Mokros	Lrng, Stat, Rep
Morris	Frac, Lrng
Mousavi	Geom, Lrng, Vis
Mura	TBlf, Phil, Tchr
Nicholls	Lrng, Vis
Orton	Lrng, Phil
Parker	RaPc, Lrng, Revw
Saul	Rsch, Lrng
Siegler	NSns, Lrng, PS
Simon	Tchg, Lrng, Prsv
Simon	Tchg, Lrng, Knw
Sophian	NSns, Lrng
Steffe	Tchg, Lrng, Knw
Vitulli	Arth, Gend, Lrng
Watanabe	Frac, Whol, Lrng
Webb	Grpg, Lrng, Ach
Wilensky	Prob, Tech, Lrng
Wynn	NSns, Lrng

Papers

Bell	Rsch, Lrng
Bell	Rsch, Lrng
Civil	Ethn, Curr, Lrng
da Ponte	Rsch, Lrng, Phil
da Ponte	Rsch, Lrng
da Ponte	Rsch, Lrng
da Ponte	Rsch, Lrng
Edwards	Curr, Tchr, Lrng
Ernest	Phil, Soc, Lrng
Ernest	Lrng, Styl, Rsch
Frid	Blf, TBlf, Phil
Harel	M/D, RaPc, Lrng
Hauger	Cals, Lrng, Knw
Jaworski	Tchg, Lrng, Rsch
Kieren	Lrng, Blf, Oral
Kirshner	Rsch, Lrng, Aff
Kirshner	Rsch, Lrng, Phil
Owens	Lrng, Rsch, Soc
Phillips	Writ, Lrng
Rillero	Writ, Lrng
Sierpinska	Soc, Lrng, Phil
von Glaserfeld	Lrng, Phil
Watson	TKnw, Isrv, Lrng

Metacognition, reflection (Mtcg); Patterns, relationships, math connections (Patt); Problem solving, reasoning (PS); Proof, justification (Prf)

Dissertations

Belanus — Curr, Tchg, Patt
Berger — Alg, PS, Lrng
Biggerstaff — PS, Styl, Mtcg
Byron — PS, Styl, Vis
Chen — Comp, PS, Ach
Clarke — Rep, Patt, Prsv
Corbin — M/D, PS, Plan
Covalt — Comp, PS
Dorn — Comp, Stat, PS
Etzen — PS, Tchg, Isrv
Erickson — Isrv, Curr, Mtcg
Fiol — RaPc, PS
Fogarty — PS, Styl, Tchr
Fouche — PS, Mtcg, CC
Frerking — Geom, Prf, Lrng
Fyfe — PS, Comp, Alg
Gamble — PS, Lrng
Garneau — PS, Ach
Golding — Frac, Mtcg, Prsv
Goodson-Espy — Alg, Arth, PS
Hancock — Est, Manp, PS
Haney — Grpg, PS, Tchg
Hunnicutt — PS, Ach, Assm
Kalustian — PS, Ethn, Grpg
Kimball — Ach, Mtcg
Kimmins — Prob, Patt, Lrng
Kline — NSns, PlcV, PS
Kolnowski — NSns, Lrng, PS
Liles — IC, PS, Tech
Lyons — Lrng, A/S, PS
Manouchehri — Comp, Geom, Patt
Maro — Lang, PS, Comm
Montes — Ethn, Lang, PS
Moore — Mtcg, Blf
Muntersbjorn — PS, Phil, Lrng
Mutino — PS
Nicholas — Mtcg, Comm, Writ
Pajares — Blf, PS, Ach
Parker — RaPc, PS, Ach
Porzio — Comp, PS, Cals
Prupas — Geom, Mtcg, Lrng
Puig — PS, Tchg, Lrng
Rhine — Lang, Assm, Mtcg
Sadatmand — Alg, PS, CAI
Santiago-Collazo — Comp, Geom, PS
Shah — PS, LD, CAI
St-Pierre — Assm, PS
Stewart — Lang, PS, D/R
Tookey — Ach, PS, Lrng
Uccellini — Geom, Prf, Comm
Van Akkeren — PS, Ach, Lrng
Van Zoest — Grpg, Oral, Mtcg
Vrooman — PS, Patt, Frac
Wade — PS, Curr, Ach
Walsh — PS, Comp
Weissman — Comp, PS, Mtcg
Williams — Comp, Tech, PS
Zang — Styl, PS

Articles

Battista — Geom, Prf, Revw
Boekaerts — PS, Lrng, Aff
Cai — CC, PS, M/D
Campbell — PS, Vis, Lrng
Cardelle-Elawar — Tchg, Mtcg, Ethn
Corbin — PS, Grpg , Plan
Edwards — Comp, Geom, PS
English — Alg, PS
Foltz — Prf, Lrng, PS
Fong — RaPc, PS, D/R
Galbraith — Impl, PS, Prf
Gill — Lrng, PS, A/S
Gras — Prob, Stat, PS
Harel — M/D, PS, Isrv
Hativa — Arth, Comp, PS
Hegarty — PS, Arth
Madsen — Lrng, Comm, PS
Mayer — CC, Matl, PS
Meira — Rep, PS, Knw
Menon — Frac, Decm, PS
Newman — PS, Ach, Aff
Nguyen-Xuan — Comp, Alg, PS
Norwood — PS, Grpg, Ach
Orton — Frac, Prf, Revw
Qin — Grpg, PS, Revw
Rabinowitz — Arth, PS, A/S
Reys — Arth, Ethn, Att, Rep, PS
Rickard — Curr, Tchg, PS
Rudnitsky — A/S, PS, Writ
Sakamoto — PS, Arth, Frac
Schmidt — PS, M/D
Selden — Prf, Rep

Shiah	PS, LD, CAI
Siegler	NSns, Lrng, PS
Silver	CC, PS,Gend
Sophian	A/S, PS
Taplin	PS, Att, Lrnr
Watters	PS

Papers

Allen	Aff, PS
Butkowski	PS, Ach, Aff
DeCorte	PS, Blf, Rep
English	PS, Arth, NSns
Kjos	PS, Writ, Att
Martin	GCal, Alg, PS
Meador	Curr, Tchg, PS
Pajares	Blf, PS, Aff
Raymond	Curr, PS, Rsch
Silver	Patt, TKnw, M/D
Watterson	Tech, PS, Isrv